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Milk Distribution Costs OF GEORGIA COOPERATIVES

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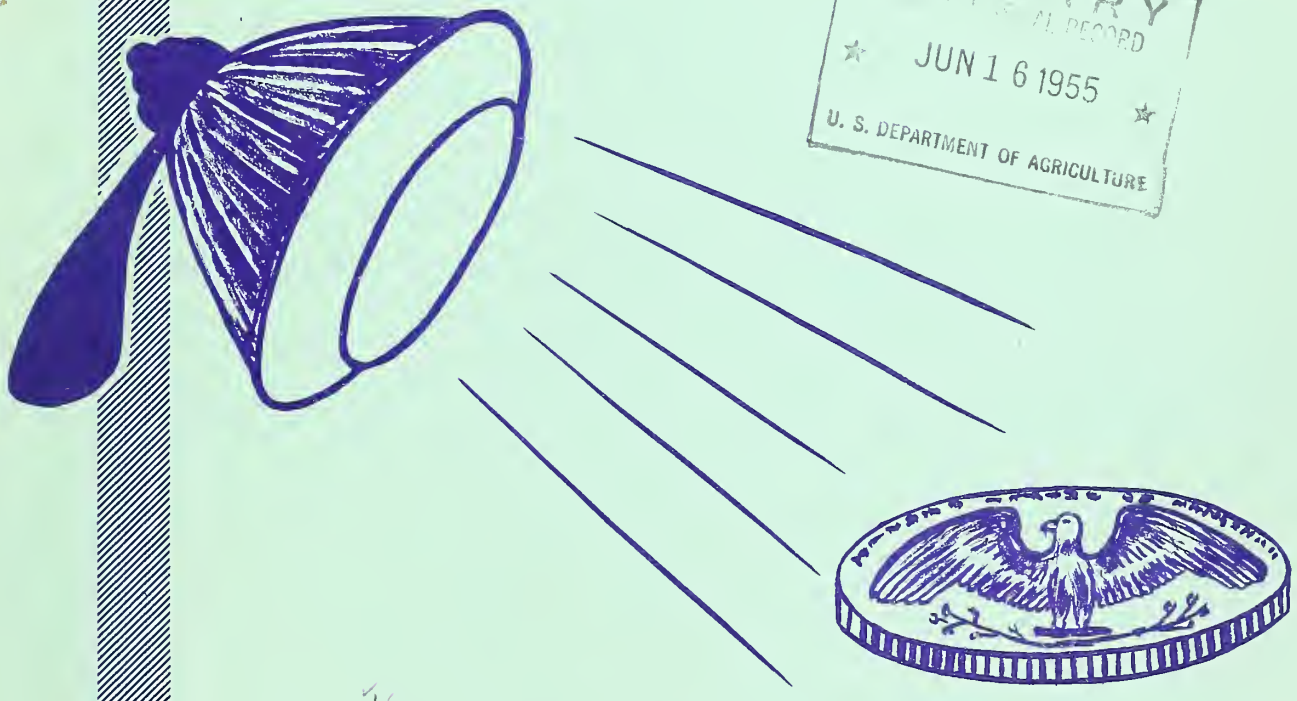

BY DONALD E. HIRSCH

FARMER COOPERATIVE SERVICE
U. S. DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

GENERAL REPORT 16

MAY 1955

FARMER COOPERATIVE SERVICE
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JOSEPH G. KNAPP, ADMINISTRATOR

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The Farmer Cooperative Service conducts research studies and service activities of assistance to farmers in connection with cooperatives engaged in marketing farm products, purchasing farm supplies, and supplying business services. The work of the service relates to problems of management, organization, policies, financing, merchandising, quality, costs, efficiency, and membership.

The Service publishes the results of such studies; confers and advises with officials of farmers' cooperatives; and works with educational agencies, cooperatives, and others in the dissemination of information relating to cooperative principles and practices.

SUMMARY

This report gives the results of a cost study made in 1953 of 13 milk distributing cooperatives in Georgia. The associations were classified into three groups according to size: Those marketing less than 2 1/2 million pounds of milk equivalent in 1952, those marketing between 2 1/2 and 5 million pounds, and those marketing more than 5 million pounds. Investment and operating costs were then compared within and between the size groups.

A special method of calculating milk equivalent volumes has been used. This method, described in the Appendix to this report, takes into account all milk solids handled by each cooperative. Thus it includes the solids received in forms other than fluid whole milk. It also compensates for differences indicated by the average butterfat test of the whole milk received.

Total assets of the largest associations averaged $18.28 for each 100 pounds of milk equivalent handled. This was about 50 percent greater than the average for the smallest associations. Average liabilities of the smallest cooperatives were greater than the average of the largest, however. Members' equities averaged $12.37 for each 100 pounds of milk equivalent handled by the largest associations. This compared to $6.57 for the medium size group, and only $4.52 for the smallest cooperatives.

A common way to measure financial stability and achievement is to compare certain balance sheet items with others. The ratios derived for each cooperative are then compared with similar ratios for other cooperatives. In this report a series of ratios is presented as "standards of successful operation." These ratios represent attainable goals for most cooperatives.

The ratio analysis of the Georgia cooperatives shows the larger associations, as a group, to be in definitely stronger financial condition than the smaller.

Operating cost summaries help management determine whether a low net margin is due to (1) low resale prices, (2) low proportions of total sales in high-return products, or (3) high operating costs. Such summaries were prepared for 12 of the Georgia cooperatives.

Costs of milk distribution may be segregated under three major headings: Processing expenses; selling and delivering expenses; and administrative and general expenses.

The largest associations had considerably lower processing expenses, and appreciably higher selling and delivering expenses than the smallest associations for each 100 pounds of milk equivalent. The largest associations also had higher average net sales receipts for each unit sold. As a result of these factors, the total payment (advance payment plus net operating margin) for dairy products made to patrons of the largest

dairy cooperatives averaged $7.59 per 100 pounds of milk equivalent as compared to $6.58 for the medium size group and only $6.18 for the smallest associations. Thus the members of large cooperatives received considerably more for their milk than members of small cooperatives.

Detailed expense figures reflected operating differences. For example, bottle and carton costs increased as the proportions of milk sold in paper cartons increased.

The labor cost for these businesses averaged only 40.8 percent of the total operating cost. This a much lower proportion than is common in many northern markets, particularly the large ones.

The group cost comparison just discussed is based on averages for a number of cooperatives. A refinement of this technique is to establish a hypothetical or "model" plant. Such a model was constructed to represent operations of a cooperative handling 10,000 pounds of milk daily under specified conditions. Detailed investment and operating cost data are given in this report. This model plant will serve as a "cost yardstick" for cooperatives throughout the South Atlantic region and will be a useful reference for cooperatives in other areas.

Both group cost and model plants comparisons were based on operations completed in the past. Therefore, they have limited value as guides to reducing costs in the future. They serve to spotlight problem areas but further study is needed.

MILK DISTRIBUTION COSTS OF GEORGIA COOPERATIVES

By

Donald E. Hirsch
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At the joint request of the Georgia Association of Dairy Cooperatives and the Georgia Extension Service, this agency made a study in 1953 of the operating problems and costs of all milk distributing cooperatives in Georgia. The objectives of that study were (1) to determine actual costs during the most recent fiscal years for which information was available, (2) to develop recommendations to assist the cooperatives in serving Georgia dairy farmers more efficiently, and (3) to publish the findings of the study in order that cooperatives in other states might share in its benefits.

The first two of these objectives were met in October 1953. This publication meets the third objective.

METHODS OF ANALYSIS

Fiscal years of milk distributing cooperatives in Georgia do not end on a single date. Thus, audit reports studied were for various 12-month periods. However, the range in termination dates and differences in conditions existing in the various periods were not so great as to be of major importance. In order that the data might be used comparatively in tables and figures, all 12-month periods were considered to be the calendar year 1952.

The financial tables prepared for use in this report are not identical with those in the annual or monthly audit statements of the cooperatives. It was necessary to fit the data to a standard form to permit direct comparison of individual balance sheet or expense items with those for other cooperatives.

Since volume data are essential in an analysis of financial statements, the associations were grouped according to size. The smallest size group included 5 associations, each handling less than 2 1/2 million pounds of milk equivalent in 1952. The four in the middle group each handled between 2 1/2 and 5 million pounds annually, whereas the largest size group consisted of 4 associations handling over 5 million pounds in 1952.

Each association studied was given a number according to its rank in size, with the smallest association being number 1.

Total dollar sales and expense figures of each milk distributing organization (cooperative or not) are directly affected by its physical volume of business. It is common, therefore, to compare costs among organizations on the basis of average expenses per unit of volume.

When organizations are receiving only whole milk and the average butterfat test is the same, the problem is simple. Costs per unit of volume received can be readily determined for the business as a whole, even though costs per unit of product sold may not be obtainable from each organization's records. However, many milk distributing organizations receive substantial quantities of milk solids in some form other than fluid whole milk. The problem then becomes rather complex. In such instances the cost per unit of milk received from local producers may not be meaningful in relation to measurement of operating efficiency.

In order to overcome this problem, several years ago the author developed a system of calculating milk equivalent volume. That method has been used in evaluating the operating efficiency of numerous milk distributing associations and has increased comparability of data used. It is explained in detail in the appendix to this publication.

Table 1 gives milk equivalent volume figures for each of the 13 cooperatives studied.

Table 1. - *Volume of milk marketed by 13 milk distributing cooperatives, Georgia, 1952*

Volume group[1] and association number	Volume of 4-percent milk equivalent		
	Total pounds in year	Average pounds per day	Average quarts per day
Less than 2½ million:			
1	1,788,200	4,900	2,280
2	1,798,700	4,930	2,290
3	2,175,500	5,960	2,770
4	2,256,400	6,180	2,870
5	2,421,300	6,630	3,090
2½ to 5 million:			
1	3,178,100	8,710	4,050
2	3,285,900	9,000	4,190
3	3,383,900	9,270	4,310
4	3,460,800	9,480	4,410
Over 5 million:			
1	8,139,400	22,300	10,370
2	14,480,700	39,670	18,450
3	16,083,600	44,070	20,500
4	34,842,300	95,460	44,400
Total	97,294,800	266,560	123,980

[1]Volume figures based on total pounds of milk equivalent marketed during the year.

Source: Based on records of the individual cooperatives.

Delivering milk to Troup County Co-op Dairies, La Grange, Ga.

Operating costs often are compared in terms of dollars per hundredweight of milk handled daily during the period studied. That practice was followed in this study, with special allowances to obtain entire milk equivalent volumes.

Investment comparisons frequently are made in terms of dollars per 100 pounds of milk handled during a year. In this report, investment comparisons were made on the basis of average dollars per pound of milk equivalent handled daily during the period. The latter method eliminates the effects of differences in the number of days in each month, and permits comparisons between months as well as of monthly data with annual. In comparing monthly data, however, the effects of seasonal differences in volume must be recognized.

CAPITAL INVESTMENTS

Balance Sheet Summaries

"Assets" represent what a cooperative owns -- that is, the total value of its physical resources. "Current assets" may be converted fairly readily into cash in case of emergency or dissolution, whereas "fixed assets" are less readily convertible to cash and are depreciated in value annually on the association's records.

"Liabilities" are what the cooperative owes others. "Current liabilities" are those debts which must be met within one year or less. "Members' equities" represent the amounts of capital supplied by producer-patrons. If nonmember producer-patrons have substantial equities, the term "patrons' equities" is preferable to "members' equities". This was not the case for the Georgia associations. Included in the equities of producer-patrons -- whether members or not -- may be stock or other capital certificates, current operating savings, and portions of patronage refunds for earlier years which were not paid out in cash. The "nonpatrons' equities" represent the investments of non-producers.

Balance sheets of 13 milk distributing cooperatives in Georgia were summarized to illustrate conditions existing December 31, 1952. For each association the major balance sheet items were converted to dollars per pound of milk equivalent handled daily in 1952. Table 2 shows the results of this treatment by size groups. Figures 1 and 2 illustrate graphically some of the significant differences between associations in selected size groups.

The table and figures, together with the more detailed data on which they are based, indicate important differences among the associations. Some of them may be noted as follows:

1. Current assets per pound of milk increased as total volume handled increased.

2. Fixed assets per unit of volume also increased as total volume increased. This is contrary to what we would normally expect but two unusual factors contributed to the relationship. An association in the small volume group merely leases the land and buildings it uses; this results in low fixed assets. However, a member of the largest size group had a new and modern plant on which depreciation had not yet taken effect. Furthermore, the new plant had unusually large and efficient facilities for utilizing surplus milk in the form of manufactured dairy products. This resulted in high fixed assets.

3. Total assets per unit of volume increased as total volume increased. This relationship reflected the unusual situation with respect to fixed assets.

4. Current liabilities per unit of volume usually decreased as total volume increased.

5. Long-term liabilities also decreased as total volume increased. However, they too were affected by the fact that one association leased its building while another had a large new plant.

6. Total equities increased considerably as total volume increased. Of these total equities, 92 percent represented member capital in the largest size group, 65 percent for the middle, and 73 percent for the smallest size group.

Table 2. - *Summaries of the balance sheets, average per pound of milk handled daily in 1952, of 13 milk distributing cooperatives grouped according to annual volumes, Georgia, December 31, 1952*

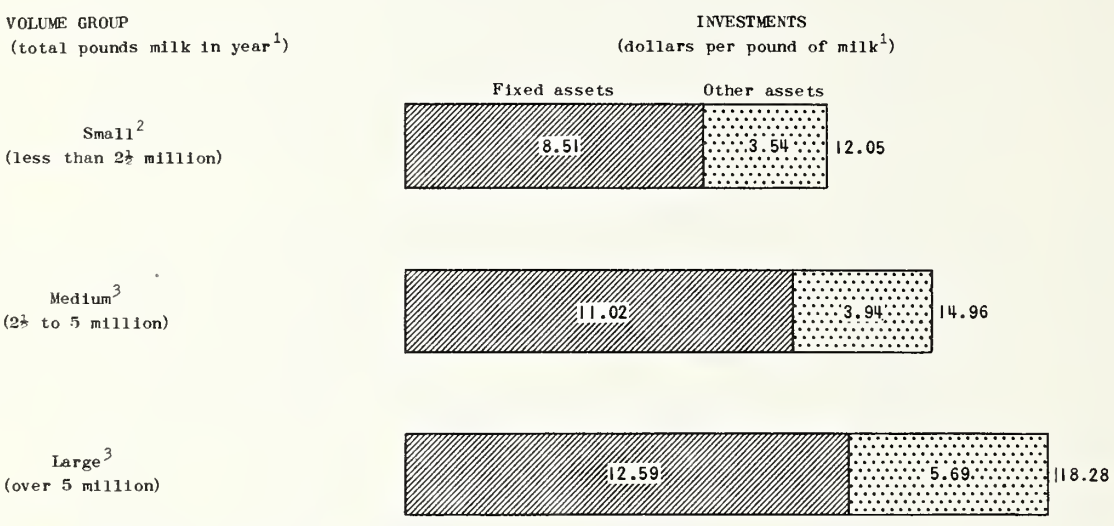
Item	Volume group[1]						All associations	
	Less than 2½ million[2]		2½ to 5 million[3]		Over 5 million[3]			
	Range	Average	Range	Average	Range	Average	Range	Average
	Per pound of milk							
Assets:								
Current assets	$2.85 - $4.16	$3.21	$2.12 - $4.05	$3.36	$4.64 - $5.95	$5.29	$2.12 - $5.95	$3.91
Fixed assets (net)	4.12 - 12.19	8.51	8.98 - 12.88	11.02	9.38 - 16.90	12.59	4.12 - 16.90	10.55
Other assets	.18 - .40	.33	.22 - 1.31	.58	.04 - .66	.40	.04 - 1.31	.40
Total assets[4]	7.56 - 15.40	12.05	12.99 - 18.03	14.96	14.34 - 23.36	18.28	7.56 - 23.36	14.86
Liabilities and equities:								
Current liabilities	1.72 - 8.21	3.98	2.30 - 4.38	3.32	2.23 - 3.98	3.39	1.72 - 8.21	3.61
Long-term liabilities	.00 - 5.44	1.83	.00 - 2.99	1.46	.00 - 2.88	1.39	.00 - 5.44	1.57
Nonpatrons' equities	.00 - 3.03	1.72	.69 - 5.33	3.61	.00 - 3.80	1.13	.00 - 5.33	2.12
Members' equities	[5](.62) - 9.20	4.52	4.60 - 9.16	6.57	9.71 - 17.23	12.37	[5](.62) - 17.23	7.56
Total liabilities and equities[4]	7.56 - 15.40	12.05	12.99 - 18.03	14.96	14.34 - 23.36	18.28	7.56 - 23.36	14.86

[1]Volume figures based on total pounds of milk equivalent marketed during the year.
[2]Includes five associations, one of which leases land and buildings used. The average fixed assets (net), total assets, and total liabilities and equities are lower than if this association were excluded.
[3]Includes four associations.
[4]Figures in "Range" columns are not the sums of the lowest and highest amounts given immediately above. One is the sum for the individual association which had the lowest total, and the other is the sum for the association which had the highest total.
[5]Parentheses indicate a minus figure.

Source: Based on records of the individual cooperatives.

FIGURE 1

ASSETS PER POUND OF MILK HANDLED DAILY IN 1952, 13 MILK DISTRIBUTING COOPERATIVES GROUPED ACCORDING TO ANNUAL VOLUMES, GEORGIA, DECEMBER 31, 1952

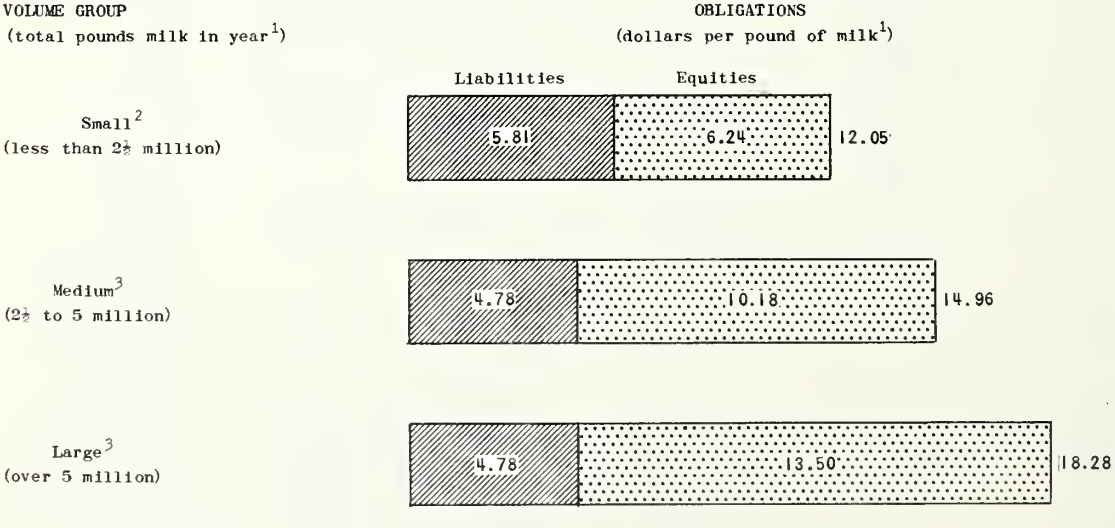


[1]Total milk equivalent basis.
[2]Includes 5 co-ops, one of which does not own land and buildings.
[3]Includes 4 co-ops.

Source: Based on records of the individual cooperatives.

FIGURE 2

LIABILITIES AND EQUITIES PER POUND OF MILK HANDLED DAILY IN 1952, 13 MILK DISTRIBUTING COOPERATIVES GROUPED ACCORDING TO ANNUAL VOLUMES, GEORGIA, DECEMBER 31, 1952



[1]Total milk equivalent basis.
[2]Includes 5 co-ops, one of which does not own land and buildings.
[3]Includes 4 co-ops.

Source: Based on records of the individual cooperatives.

A comparative analysis of the combined balance sheet of the 13 cooperatives is presented in table 3. These associations had total assets of nearly $5 million and handled almost 1 million pounds of milk equivalent in 1952.

Table 3. - *Comparative analysis of the combined balance sheet for 13 milk distributing cooperatives, Georgia, December 31, 1952*[1]

Item	Average per 100 lbs. of milk equivalent in 1952	Average per quart of milk equivalent in 1952	Average per pound of milk equivalent per day in 1952
Assets:			
Current assets	$1.07	2.30¢	$3.91
Fixed assets (net)	2.89	6.21	10.55
Other assets	.11	.24	.40
Total	4.07	8.75	14.86
Liabilities and equities:			
Current liabilities	.99	2.13	3.61
Long-term liabilities	.43	.92	1.57
Nonpatrons' equities	.58	1.25	2.12
Members' equities	2.07	4.45	7.56
Total	4.07	8.75	14.86

[1]Volume figures based on total pounds of milk equivalent marketed during the year.

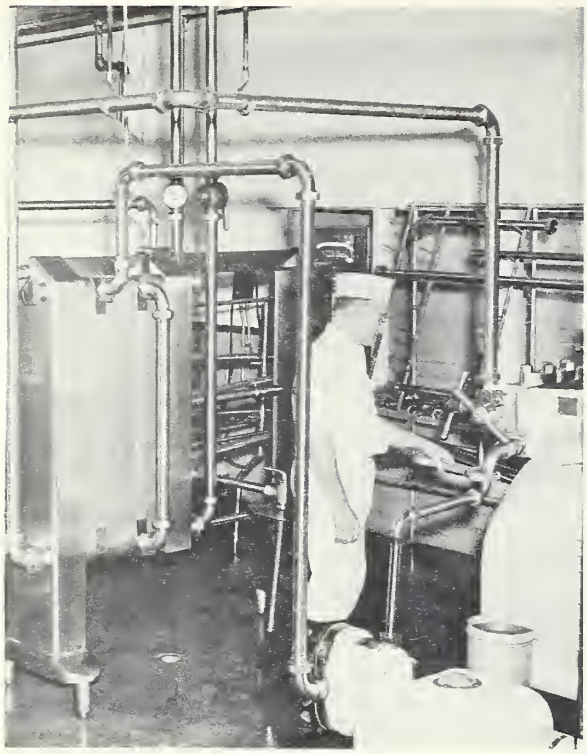
Source: Based on records of the individual cooperatives.

Ratio Analysis

A common way to measure financial stability and achievement is to compare certain balance sheet items with others. The desired ratios between such items vary considerably between businesses and even regions. In this report, a series of ratios are presented as "standards of successful operation." They are based on general accounting practices for the dairy industry, plus the author's personal experiences with 60 milk distributing cooperatives.

These standard ratios represent attainable goals for most cooperatives. They cannot be easily and quickly reached but there is no standard ratio given here that some cooperative in Georgia does not now surpass. With the single exception of the relationship of net fixed assets to total assets, the higher the ratio the better, although in rare instances borrowed capital may not be utilized fully if a ratio is high.

Ratios are merely one of several guides to an analysis of the financial condition of a particular association. To illustrate, one of these associations has a high rate of investment in fixed assets. This



Checking a pipe connection in the processing room of Georgia Milk Producers Confederation, Atlanta, Ga.

adversely affects some of the financial ratios discussed later, even though the overall ratio picture for this association is very good. In order to evaluate fully the status and prospects for this association, one needs to know about its recent construction program, historical record of substantial operating savings, and the sound direction given to the business by capable management.

A ratio analysis of the balance sheets is presented in table 4. The fact that one association does not own its land and buildings affects the data in several instances. The general situation is as pictured, however, and use of these data for comparative purposes is not hindered materially.

1. Current assets to current liabilities. The relationship of current assets to current liabilities is a measure of the current solvency of a business. Current assets are needed for purposes other than payment of debts and should, therefore, exceed current liabilities. Otherwise, the association may not be able to meet current obligations, such as the payroll.

Only two of the associations had a current ratio equaling or exceeding 1.8 to 1. Five cooperatives failed to have even a 1 to 1 ratio. The largest associations were in appreciably better financial condition in this respect than were the small associations.

2. Net fixed assets to total assets. This is the one ratio that should be kept below the standard if possible. As a matter of fact, the standard of .55 to 1 given in this report is higher than that recommended by some accountants. In any event, a high ratio indicates either a shortage of working capital (to meet current obligations) or slow depreciation rates in "writing off" fixed assets. Only one of 13 Georgia associations had a ratio as low as the standard.

3. Members' equities to net fixed assets. It is extremely important -- for psychological as well as financial reasons -- that producer-patrons supply a substantial proportion of the capital needed for a cooperative milk distributing business. A ratio of .9 to 1.0 or higher indicates that members are supplying reasonable amounts of capital needed for facilities and that fixed charges are not apt to become burdensome in the event of a price decline. It also indicates that the cooperative

Table 4. - *Financial ratios of 13 milk distributing cooperatives grouped according to annual volume, Georgia, December 31, 1952*

Ratio[1]	Volume group[2]						All associations		Standard of successful operation
	Less than 2½ million[3]		2½ to 5 million[4]		Over 5 million[4]				
	Range	Average	Range	Average	Range	Average	Range	Average	
1. Current assets to current liabilities	.37 - 2.42	1.16	.80 - 1.21	1.03	1.29 - 2.17	1.62	.37 - 2.42	1.26	1.80
2. Net fixed assets to total assets	.54 - .79	.69	.68 - .81	.74	.65 - .72	.68	.54 - .81	.70	[6].55
3. Members' equities to net fixed assets	[5](.15) - 1.11	.47	.40 - 1.02	.62	.71 - 1.21	1.00	(.15) - 1.21	.68	.90
4. Total equities to net fixed assets	[5](.15) - 1.16	.65	.71 - 1.10	.94	.98 - 1.25	1.09	(.15) - 1.25	.87	1.00
5. Members' equities to total assets	[5](.08) - .80	.35	.30 - .69	.45	.48 - .82	.69	(.08) - .82	.48	.50
6. Total equities to total liabilities	[5](.08) - 5.03	1.70	1.12 - 4.64	2.66	1.97 - 5.84	3.33	(.08) - 5.84	2.50	2.00
7. Net fixed assets to long-term liabilities	1.84 - [7]14.25	[7]6.62	3.91 - [8]4.48	[8]2.10	4.78 - [7]31.38	[7]14.48	1.84 - [9]31.38	[9]5.52	4.50
8. Total assets to total liabilities	.92 - 6.03	2.70	2.12 - 5.64	3.66	2.97 - 6.84	4.33	.92 - 6.84	3.49	3.00
9. Members' equities to nonpatrons' equities	1.20 - [10]21.32	[10]6.68	1.00 - 13.26	4.25	2.57 - [7]29.77	[7]20.02	1.00 - [9]29.77	[9]7.98	3.00
10. Working capital[11] to long-term liabilities	[5](2.03) - [7].45	[5] [7](.63)	[5](.30) - [8].23	[5] [8](.02)	.69 - [7]3.44	[7]1.66	[5](2.03) - [9]3.44	[9].23	1.50

[1]Amount of first named item available for each $1 of the second item; e. g., the size group of smallest associations averaged $1.16 in current assets for each $1 current liabilities.
[2]Volume figures based on total pounds of milk equivalent marketed during the year.
[3]Includes five associations, one of which leases land and buildings used.
[4]Includes four associations.
[5]Parentheses indicate minus figure.
[6]For this one ratio it is desirable to be below the standard; the standard is a maximum rather than a minimum.
[7]This ratio could be computed for only 3 associations in the size group.
[8]This ratio could be computed for only 2 associations in the size group.
[9]Average for those associations for which ratios could be computed.
[10]This ratio could be computed for only 4 associations in the size group.
[11]Current assets minus current liabilities.

Source: Based on records of the individual cooperatives.

would be able to pay its creditors in case of dissolution; this may enable the association to borrow money at reasonable rates when needed. Five of the 13 associations surpassed the standard.

It should be remembered that the term "members' equities" as used in this report is synonymous with "patrons' equities." In some other areas, where nonmember producer-patrons have substantial equities, the latter term is preferable. Nonmember patron business was either nonexistent or was so limited as to be of no significance for the Georgia cooperatives.

4. Total equities (members' plus nonpatrons') to net fixed assets. This is similar to the preceding ratio but includes the capital supplied by all investors, not just producer-patrons. In most instances, the amounts from non-patrons came from local businessmen and former producer-patrons. Here again, the larger associations demonstrated greater financial stability.

5. Members' equities to total assets. This ratio is similar to number 3 above but relates to the total capital requirements of the business rather than just land, buildings, and equipment. One-third of the Georgia cooperatives more than met the standard of successful operation.

6. Total equities (members' plus nonpatrons') to total liabilities (current plus long-term). This ratio provides a comparison of the amount of investment capital to the amount of current and long-term obligations to creditors. It is important for the stability of the organization that the amount of investment capital be substantially the greater of the two. Many of the Georgia associations were able to meet a standard of 2 to 1.

7. Net fixed assets to long-term liabilities. The relationship between fixed assets and long-term borrowed capital probably is less important than most of the other ratios considered here. However, such capital usually is loaned for the purchase of fixed assets and the ratio indicates the degree to which these assets, at their depreciated value, exceed loans outstanding. There was considerable variation among Georgia associations but most more than met a standard of 4.5 to 1, and some had ratios far higher.

8. Total assets to total liabilities (current plus long-term). This is another ratio concerned with the amounts of capital supplied by patrons, other investors, and lending agencies. The approach is through a comparison of short-term and long-term loans and current obligations (such as the payroll) to total assets. Volume of business and operating efficiency are decisive in determining whether an association makes its debt payments in full and on time, but this ratio gives an indication of the amount of security for these debts. A high ratio is desirable. Nearly one-half of these associations met the standard.

9. Members' equities to nonpatrons' equities. This is supplementary to some of the preceding ratios. It indicates the extent to which current

producer-patrons supply the investment capital. This ratio seldom should be less than 1 to 1 and preferably should be at least 3 to 1 for milk distributing cooperatives in South Atlantic states. Six of the 13 Georgia associations were definitely in good condition in this respect, and 4 had very high ratios.

Using a magnifying lens to be sure bottles are clean.

10. Working capital to long-term liabilities. "Working capital" is the amount resulting from subtracting current liabilities from current assets. As the term implies, this amount is used to meet various current needs. A ratio of 1.5 to 1.0 is high enough to indicate that interest and amortization of long-term debts are not apt to become so large that there will not be enough capital to meet current obligations. Only one of the 13 Georgia cooperatives met this standard. However, the standard of successful operation for this ratio is more flexible than the others. A ratio of 1.0 to 1.0 is satisfactory.

It may be concluded that the Georgia milk distributing cooperatives as a group are definitely short of working capital. The average amount of investment capital is almost adequate, however. It is also apparent that the large cooperatives are in better financial condition than the small.

Associated with ratio analysis is the need to consider trade accounts receivable. Milk distributing cooperatives frequently have difficulty in collecting trade accounts. Many distributing organizations have had financial troubles because of overly generous credit policies.

Every cooperative should classify its trade accounts receivable according to age. Management should know what proportion of the accounts have been outstanding for less than 30 days, 30 to 59 days, 60 to 89 days, and 90 days and over.

As a "standard of successful operation," it may be considered undesirable to have the gross amount of trade accounts receivable exceed an amount equal to 2 1/2 weeks' sales. The reserve for bad debts then should equal 1/2 of a week's sales. Thus the net amount of trade accounts receivable would equal 2 weeks' sales. Of 12 Georgia cooperatives, one equalled and two surpassed the standard for maximum gross accounts receivable while 4 associations surpassed the standard for the maximum net amount.

Particular kinds of sales outlets may require special consideration in evaluating data for a given cooperative. For example, an association may have a large volume of sales to a government institution or other buyer who pays regularly and in full but more slowly than most customers. Such factors must always be considered whether the association's current data are being compared with those of other organizations or with data for its own operations during past periods.

OPERATING EXPENSES

Operating cost summaries were prepared for 12 of the 13 cooperatives. Eleven of the cooperatives supplied information permitting comparison of detailed operating costs.

Summary Statements

By Size Groups

The costs of "milk distribution" may be segregated under three major headings: processing expenses, selling and delivering expenses, and administrative and general expenses. Table 5 presents such a classification for 12 of the cooperatives distributing milk in Georgia in 1952.

A low net margin may be due to (1) low resale prices, (2) low proportions of total sales in high-return products, or (3) high operating costs. The use of operating statement summaries, together with other information, enables management to determine where its problems are. Differences are great, both within and between size groups.

Figures given under "paid for dairy products" include payments for purchased manufactured dairy products as well as for milk delivered by local producers. These payments are the current advance payments only, however. To determine the final annual figure, it is necessary to add the "net operating margin (loss)" figure to that for "paid for dairy products." If this is done, the largest associations averaged payments of $7.59 per hundredweight as compared to only $6.18 and $6.58 for the other two groups of cooperatives.

In terms of quarts of milk equivalent, the average net sales figure for each of the three size groups was as follows:

Size group	Net sales, in cents per quart
Small	21.4¢
Medium	22.2
Large	24.0

These figures not only reflect the high level of resale prices in Georgia in 1952, relative to prices in some other states, but also indicate important differences between groups of cooperatives with respect to average prices received.

Table 5. - *Summaries of the operating statements, per 100 pounds of milk handled, of 12 milk distributing cooperatives grouped according to annual volumes, Georgia, 1952*

Item	Volume group[1]						All associations	
	Less than 2½ million[2]		2½ to 5 million[3]		Over 5 million[4]			
	Range	Average	Range	Average	Range	Average	Range	Average
	Per 100 pounds of milk							
Net sales	$9.51 - $10.51	$9.97	$9.98 - $10.76	$10.31	$10.81 - $11.66	$11.17	$9.51 - $11.66	$10.38
Paid for dairy products	6.22 - 6.93	6.41	6.08 - 6.87	6.43	6.48 - 6.83	6.69	6.08 - 6.93	6.49
Available for operations[5]	3.05 - 4.29	3.56	3.59 - 4.68	3.88	4.27 - 4.84	4.48	3.05 - 4.84	3.89
Operating expenses:								
Processing	1.33 - 2.35	1.93	1.36 - 2.25	1.83	1.45 - 1.71	1.55	1.33 - 2.35	1.80
Selling and delivering	1.02 - 1.56	1.37	.97 - 2.01	1.46	1.36 - 1.81	1.61	.97 - 2.01	1.46
Administrative and general	.29 - .58	.45	.32 - .53	.38	.35 - .44	.40	.29 - .58	.41
Total operating expenses[5]	3.15 - 4.32	3.75	3.01 - 4.27	3.67	3.52 - 3.61	3.56	3.01 - 4.32	3.67
Gross operating margin (loss)	[6](.81) - .13	[6](.19)	[6](.20) - .59	.21	.72 - 1.23	.92	[6](.81) - 1.23	.22
Add: Other receipts	.00 - .07	.02	.02 - .14	.07	.02 - .04	.03	.00 - .14	.04
Deduct: Other expenses	.00 - .17	.06	.07 - .20	.13	.00 - .10	.05	.00 - .20	.08
Net operating margin (loss)[5]	[6](.81) - .03	[6](.23)	[6](.21) - .45	.15	.64 - 1.26	.90	[6](.81) - 1.26	.18

[1]Volume figures based on total pounds of milk equivalent marketed during the year.
[2]Includes five associations, one of which leases land and building used.
[3]Includes four associations.
[4]Includes three associations; comparable data not available for fourth association in study group.
[5]Figures in "Range" columns are not the sums of the lowest and highest amounts given immediately above. One is the sum for the individual association which had the lowest total, and the other is the sum for the association which had the highest total.
[6]Parentheses indicate a minus figure.

Source: Based on records of the individual cooperatives.

The size and relationship of each of the principal operating statement cost items for the three size groups is shown graphically in figure 3.

The largest cooperatives benefited in processing, but not in selling and delivering, from the advantages often classified as "economies of scale." In the large plants greater efficiency in use of plant labor more than offset higher wage rates. On routes, however, there was little apparent difference in efficiency in use of labor. In addition, the large cooperatives had to meet higher wage scales -- primarily because they were located in relatively large cities -- and placed greater emphasis on selling and promotion.

Figures 4 and 5 illustrate graphically the comparative advantages of large volume, in relation to processing costs per unit, and annual average net payments for milk received.

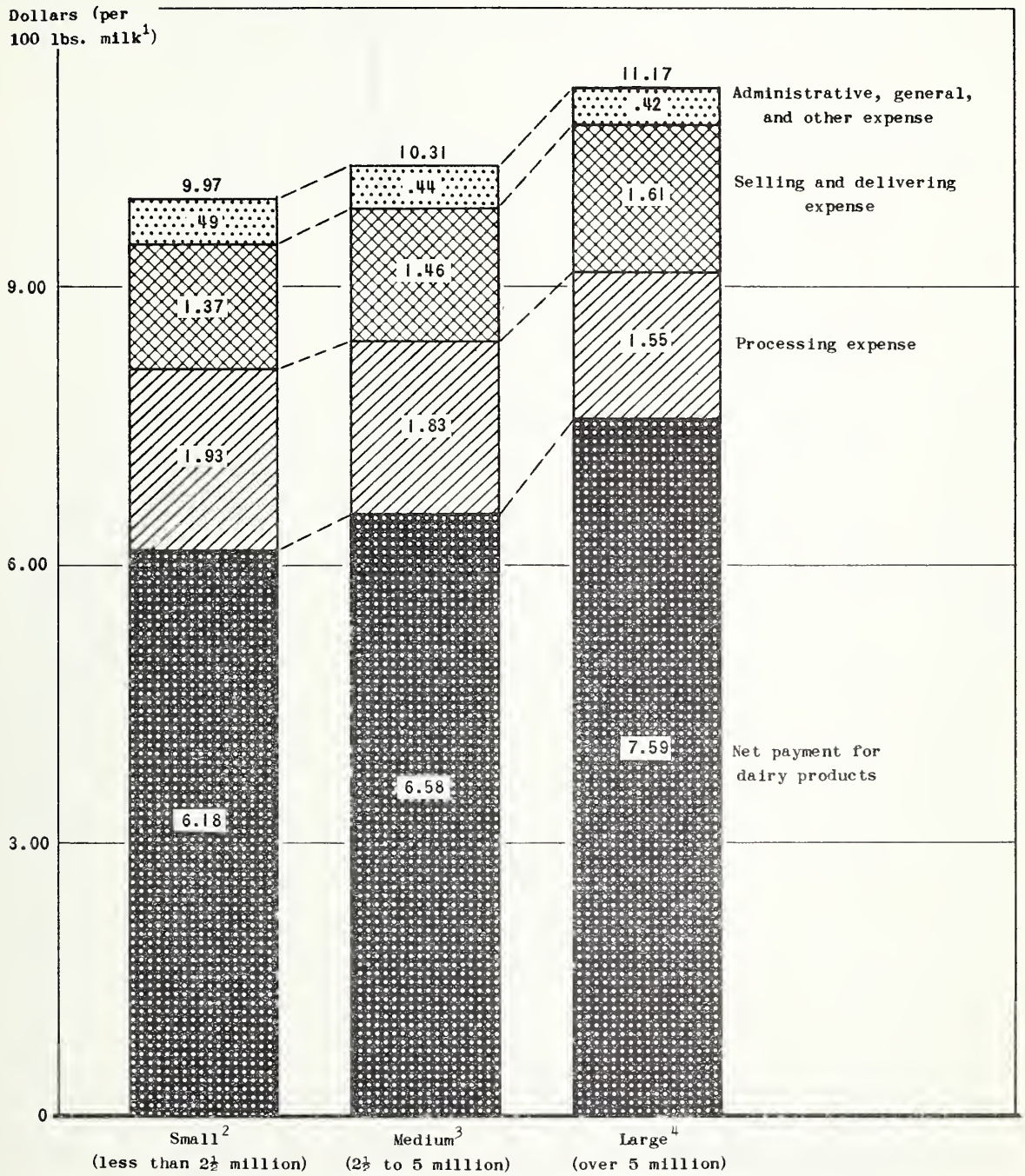
Two financial ratios were applied to the data in table 5. The ratio of "net sales" to "net fixed assets" is a measure of efficiency in use of assets and of financial strength to carry "overhead" expenses. The ratio of "net margin" to "net sales" shows operating savings as a proportion of total receipts. In businesses other than cooperatives, this would be the percentage of profit on each sales dollar.

"Standards of reasonable efficiency" have been established by the author for evaluating these ratio figures. A sales-assets ratio of 4.5 to 1 is lower than recommended by some accounting authorities but appears to be

Washing bottles at Wells Dairies Cooperative, Columbus, Ga.

FIGURE 3

PRINCIPAL OPERATING STATEMENT ITEMS, PER 100 POUNDS OF MILK HANDLED DURING THE YEAR, OF 12 MILK DISTRIBUTING COOPERATIVES GROUPED ACCORDING TO ANNUAL VOLUMES, GEORGIA, 1952



[1]Total milk equivalent basis.
[2]Includes 5 co-ops, one of which does not own land and buildings.
[3]Includes 4 co-ops.
[4]Includes 3 co-ops.

Source: Based on records of the individual cooperatives.

FIGURE 4

RELATIONSHIP OF PROCESSING COSTS PER 100 POUNDS OF MILK[1] TO TOTAL VOLUME, 12 MILK DISTRIBUTING COOPERATIVES IN GEORGIA, 1952

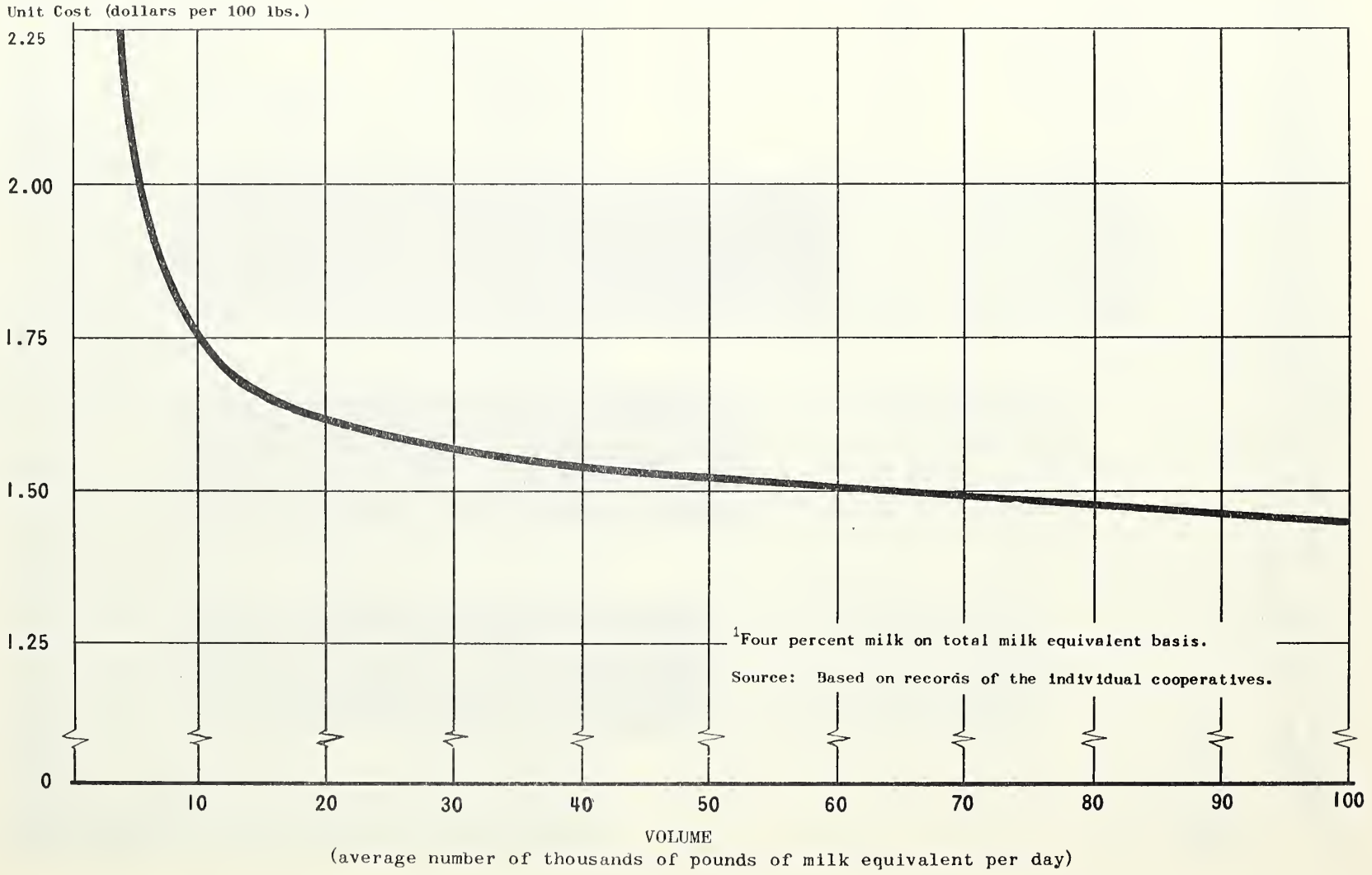
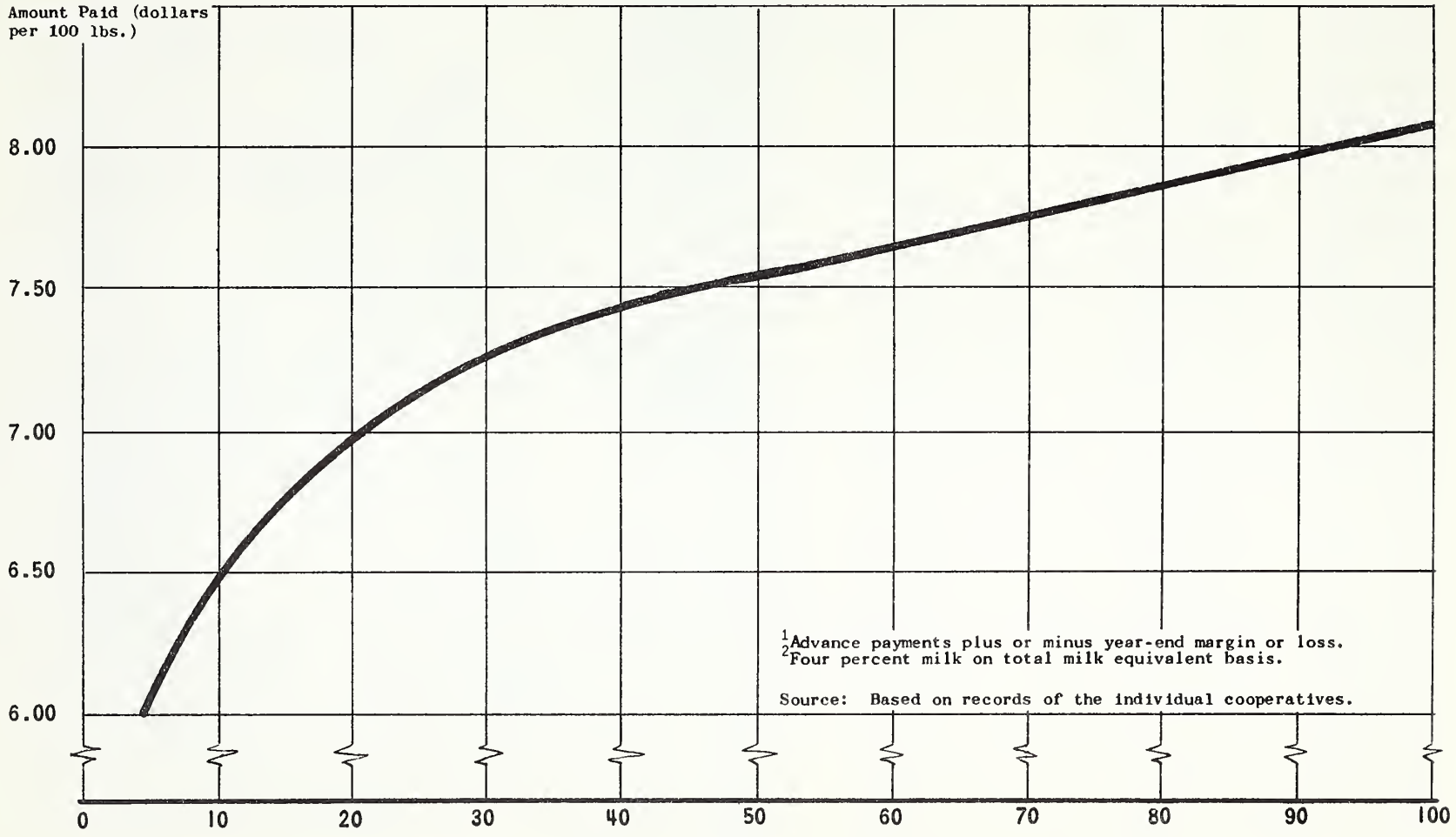


FIGURE 5

RELATIONSHIP BETWEEN VOLUME AND NET AMOUNT[1] PAID FOR MILK,[2] 12 MILK DISTRIBUTING COOPERATIVES IN GEORGIA, 1952



a reasonable goal for most milk distributing cooperatives in Georgia. As noted previously, one association has a large new plant with manufacturing facilities. If it is eliminated from the comparison, and also the small association which leases its land and building, the largest size group's sales-assets ratio of 4 to 1 is the highest for the three groups.

A margin-sales ratio of .047 to 1 appears to be a reasonable objective for a cooperative of medium size. This ratio is rather conservative. All three of the large associations surpassed it but not one of the smaller associations equaled it. Under one condition the margin-sales ratio comparison is not applicable. If a cooperative operates on a monthly pool basis -- as is advisable for many -- it might have no margin for allocation at the end of the year.

For All Cooperatives Studied

A summary of the combined operating statement for 12 of the Georgia milk distributing cooperatives has been prepared. This summary is presented in terms of three methods of measurement in order that data may be compared with results obtained in other studies (Table 6).

Table 6. - *Comparative analysis of the summary of the combined operating statement for 12 milk distributing cooperatives, Georgia, 1952*[1]

Item	Average per 100 lbs. of milk equivalent in 1952	Average per quart of milk equivalent in 1952	Percent of each sales dollar
Net sales	$10.38	22.32¢	100.0
Paid for dairy products	6.49	13.96	62.5
Available for operations	3.89	8.36	37.5
Operating expenses:			
Processing	1.80	3.87	17.3
Selling and delivering	1.46	3.14	14.1
Administrative and general	.41	.88	4.0
Total	3.67	7.89	35.4
Gross operating margin	.22	.47	2.1
Add: Other receipts	.04	.09	.4
Deduct: Other expenses	.08	.17	.8
Net operating margin	.18	.39	1.7

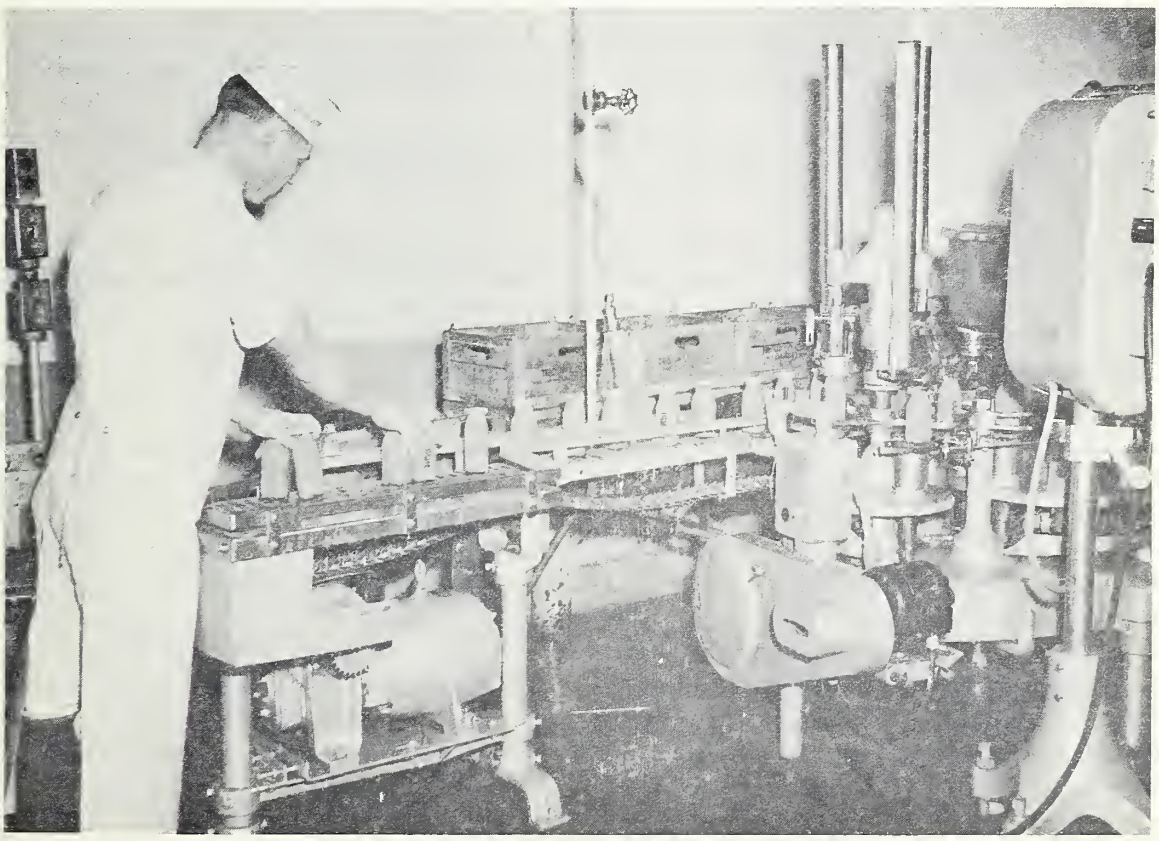
[1]Volume figures based on total pounds of milk equivalent marketed during the year.

Source: Based on records of the individual cooperatives

"Total milk equivalent" volumes were used here rather than the volumes of "fluid whole milk received from local producers and others." Average figures per 100 pounds and per quart are lowered by the inclusion of all milk equivalent in the calculations. However, percentage relationships between operating statement items are not changed by this procedure.

Table 6 shows the margin between the average sales price and the price received by the farmer. The farmer received approximately 64.2 cents (62.5 cents in advance payments plus 1.7 cents net operating margin) of each dollar paid by purchasers for these dairy products. If allowance is made for transportation, handling, and processing expense reflected in the cost of purchased dairy products, the farmers' share of the sales dollar is reduced only slightly.

It is, of course, desirable to increase the proportion returned to the producer. Yet it must be borne in mind that this figure is not necessarily a good indication of marketing efficiency. The basic objective of the cooperative is to return to the producer the highest possible average price for his milk. This may not be the largest possible proportion of the sales dollar. Sometimes the association may incur additional expenses, receive a higher average sales price, return more to each producer, and yet lower the proportion of each sales dollar paid to the producer.



Filling cases with half pints as they come from the capper in a small plant.

Two ways in which an individual cooperative might compare its cost breakdown with expenses of other associations are demonstrated in figures 6 and 7. It is evident from figure 7 that the selected cooperative performed a remarkably effective job of returning a high proportion of the sales dollar to its producers. Its processing, and administrative and general expenses were relatively low but selling and delivering relatively high.

Table 7 compares the average operating expenses for 11 Georgia cooperatives with those for 342 fluid milk dealers scattered throughout the United States. A few of the 342 "dealers" may be cooperatives but most are not.

A striking difference is apparent between the 11 cooperatives and the 342 dealers when the expense of raw milk is taken as a proportion of the net sales dollar. The cooperatives paid over 60 percent of the sales dollar for raw fluid whole milk delivered to plants; the 342 dealers paid only 53 percent. This indicates that the cooperatives served farmers far more efficiently than other organizations. However, there are several qualifying factors to consider.

1. Retail price levels for the associations in Georgia probably were slightly higher than the averages for the 342 dealers. If handling costs were approximately equal per unit of product handled, the value of milk as a proportion of the net sales dollar would automatically be higher in Georgia than for the United States as a whole. However, it is unlikely that this relationship was of prime importance in 1952.

2. The 11 cooperatives received a high proportion of their milk solids in the form of raw fluid whole milk. Possibly the 342 dealers purchased relatively larger quantities of cream, condensed milk, and other dairy products. The cost of such materials is included under "All other expense" and is not accounted for in the entry for "Raw milk."

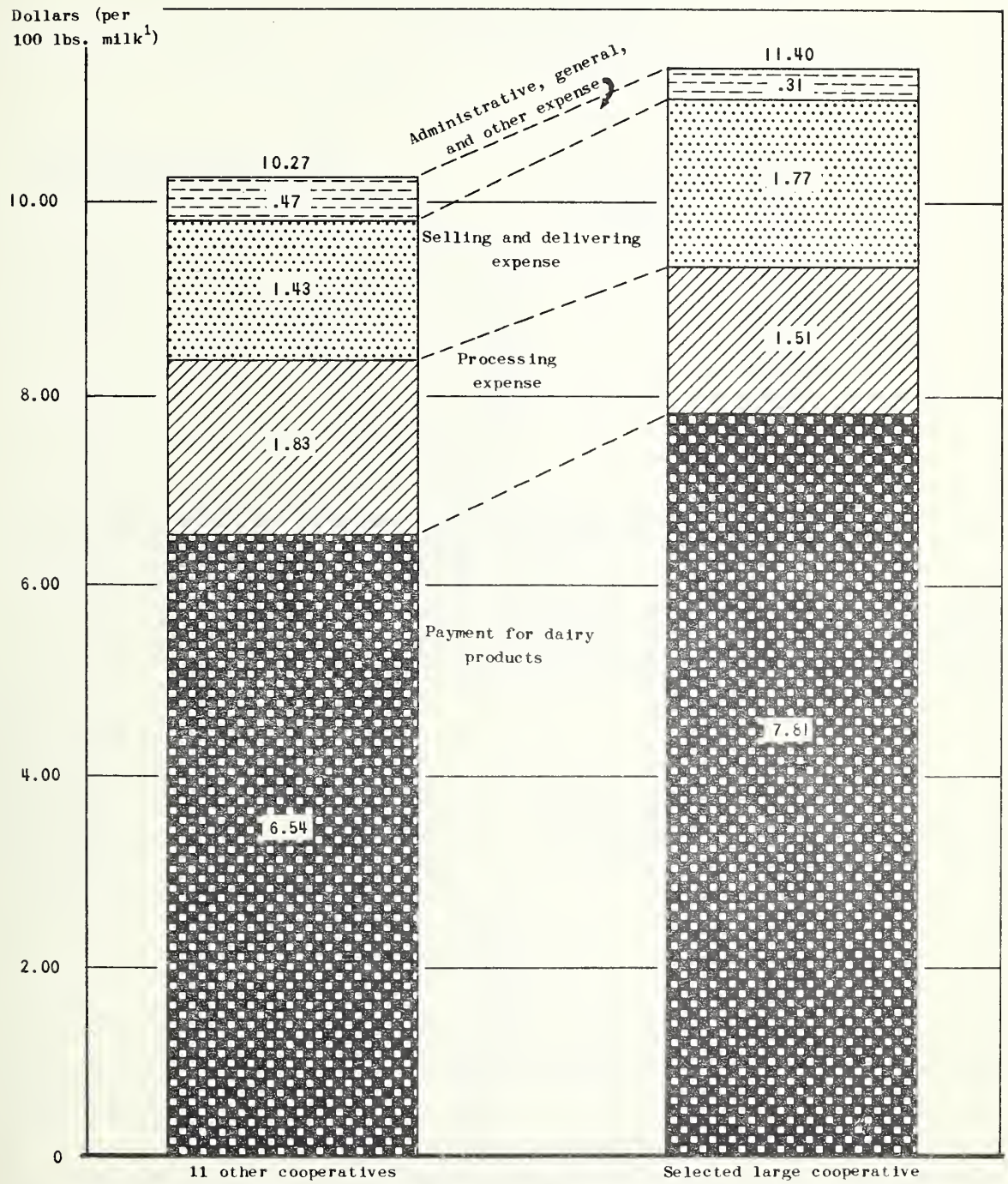
3. Differences in operating practices and services affect costs. No information is available to permit an evaluation of such differences as may exist.

There is, however, another point to consider. Whereas the net margins are almost identical -- 1.7 percent for the cooperatives and 1.4 percent for the 342 dealers -- all of the margin of a cooperative is allocated to farmers whereas little or none of the margin of another firm would go to producers. Thus, while it is not possible to state precisely the comparative advantage to farmers delivering to the Georgia cooperatives, there appears to be little doubt that such an advantage existed in 1952.

Salaries, wages, taxes, and licenses were all relatively low for the group of cooperatives. This was due principally to the cooperatives' geographic location in the South and in small cities.

FIGURE 6

PRINCIPAL OPERATING STATEMENT ITEMS, PER 100 POUNDS OF MILK HANDLED DURING THE YEAR, OF A SELECTED LARGE COOPERATIVE AND 11 OTHER MILK DISTRIBUTING COOPERATIVES IN GEORGIA, 1952

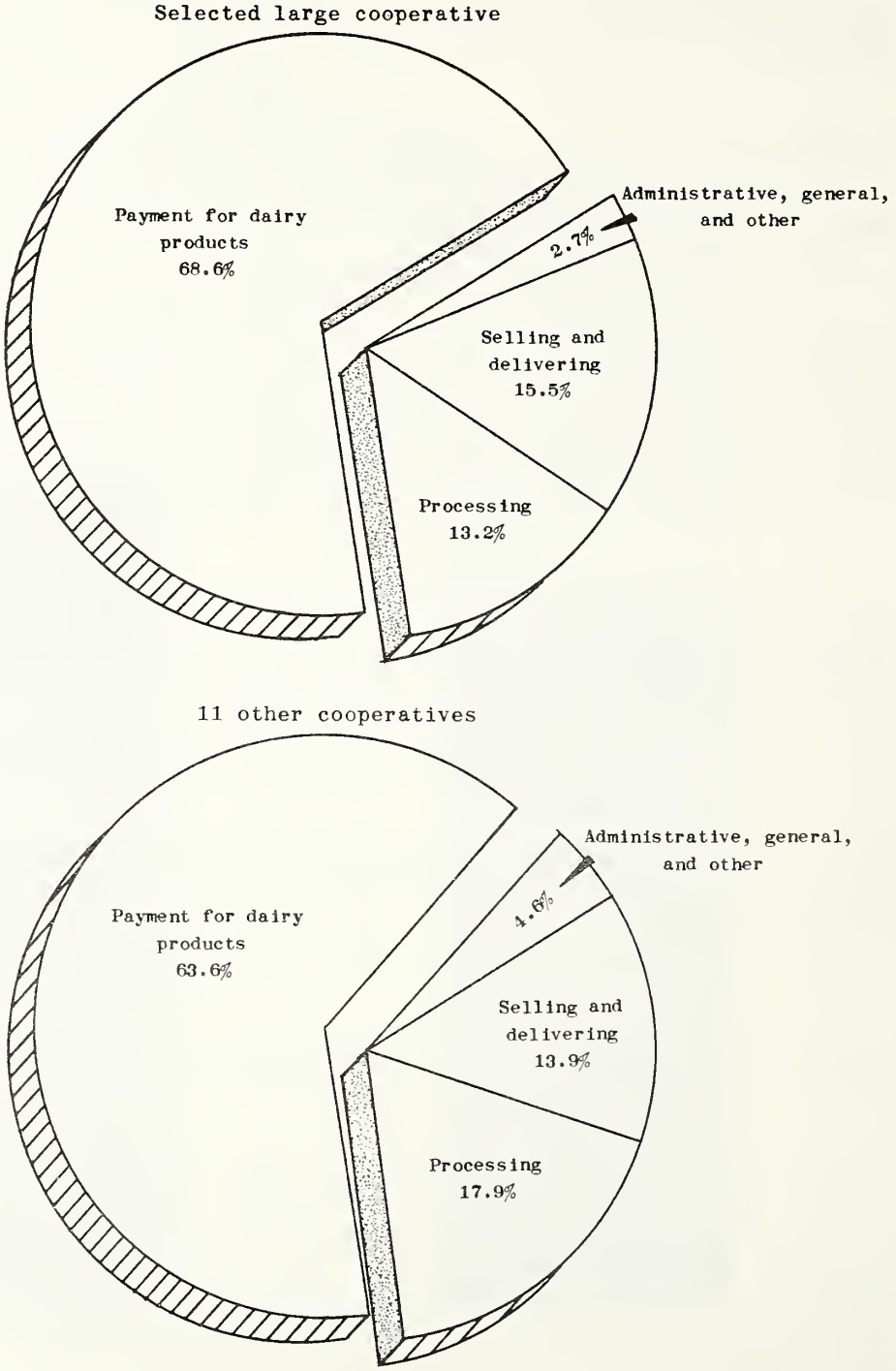


[1]Total milk equivalent basis.

Source: Based on records of the individual cooperatives.

FIGURE 7

PERCENTAGE DISTRIBUTION OF THE SALES DOLLAR, A SELECTED LARGE COOPERATIVE AND AVERAGE FOR 11 OTHER MILK DISTRIBUTING COOPERATIVES IN GEORGIA, 1952



Source: Based on records of the individual cooperatives.

Table 7. - *Operating expenses as proportions of the net sales dollar, averages for 11 cooperatives in Georgia and 342 fluid milk dealers in the United States, 1952*

Item	Percent of sales dollar	
	11 cooperatives in Georgia	342 dealers in United States
Net sales	100.0	100.0
Raw milk[1]	60.7	53.0
Salaries and wages	14.6	19.9
Taxes and licenses	0.8	2.3
Insurance	0.6	0.5
Depreciation	2.7	1.4
Advertising	0.5	0.8
Containers	3.5	5.1
All other expense	14.9	15.6
Total	98.3	98.6
Net margin[2]	1.7	1.4

[1]Raw, fluid whole milk delivered to the plants. The cost of other dairy products received, as well as purchases of chocolate and other ingredients, is included under "All other expense."
[2]Net savings for cooperatives; net profits for others.

Source of data: For the Georgia cooperatives - The survey on which this entire report is based. For the 342 dealers - (1) Starr, G. W. Milk Distribution Costs - 1952. The Milk Dealer, 168 pp. See p. 112. The Olsen Publishing Co. Milwaukee, January 1954. (2) Where Your Milk Dollar Goes. Pamphlet, 4 pp. Milk Industry Foundation. Washington, February 1954.

Depreciation was rather high for the cooperatives and probably reflects the existence of newer facilities. Although advertising was not a major cost item for either group, the 342 dealers spent appreciably more than the cooperatives.

Expense Detail

Detailed operating expense figures are summarized in table 8 for 11 of the 13 associations studied. These figures show lower labor costs in processing but higher labor costs in selling and delivering for the larger associations.

There is a tendency for certain unit costs to increase as associations grow larger. Among them are taxes, insurance, and advertising. In addition, labor rates are usually higher because larger associations are in relatively large cities. In this group of cooperatives, economies related to volume about equal these increases.

Table 8. - *Operating expense detail, per 100 pounds of milk handled, of 11 milk distributing cooperatives grouped according to annual volumes, Georgia, 1952*

Item of expense	Volume group[1]						All associations	
	Less than 2½ million[2]		2½ to 5 million[3]		Over 5 million[4]			
	Range	Average	Range	Average	Range	Average	Range	Average
	Per 100 pounds of milk							
Processing:								
Labor	$.318 - $.561	$.438	$.433 - $.903	$.625	$.360 - $.470	$.415	$.318 - $.903	$.502
Supplies	.210 - 1.009	.604	.290 - .541	.434	.416 - .437	.426	.210 - 1.009	.510
Bottles, cartons	.117 - .383	.218	.183 - .398	.274	.279 - .327	.303	.117 - .398	.254
Depreciation of building, equipment	.081 - .266	.163	.110 - .172	.140	.101 - .166	.133	.081 - .266	.149
Repairs to building, equipment	.081 - .158	.127	.052 - .130	.078	.071 - .079	.075	.052 - .158	.100
Fuel, light, power	.144 - .247	.190	.137 - .176	.162	.087 - .177	.132	.087 - .247	.169
Insurance	.018 - .030	.022	.011 - .022	.016	.004 - .032	.018	.004 - .032	.019
Laundry, cleaning supplies	.025 - .077	.057	.013 - .109	.047	.016 - .055	.036	.013 - .109	.050
Taxes	.015 - .032	.022	.021 - .060	.031	.043 - .048	.046	.015 - .060	.030
Other	.017 - .272	.090	.001 - .050	.015	.003 - .031	.017	.001 - .272	.050
Total processing[5]	1.331 - 2.353	1.931	1.361 - 2.247	1.822	1.488 - 1.714	1.601	1.331 - 2.353	1.833
Selling and delivering:								
Salaries, commissions	.579 - .847	.709	.366 - .985	.738	.772 - 1.106	.939	.366 - 1.106	.761
Truck, garage	.186 - .391	.330	.224 - .574	.361	.217 - .275	.246	.186 - .574	.326
Retail store	.000 - .232	.046	.000 - .000	.000	.000 - .154	.077	.000 - .232	.035
Depreciation of equipment	.087 - .222	.128	.100 - .172	.136	.046 - .123	.084	.046 - .222	.123
Advertising	.000 - .087	.039	.029 - .109	.057	.059 - .068	.064	.000 - .109	.050
Insurance	.020 - .047	.033	.010 - .037	.026	.018 - .026	.022	.010 - .047	.029
Taxes	.033 - .049	.041	.024 - .066	.049	.035 - .052	.044	.024 - .066	.044
Supplies	.004 - .062	.024	.007 - .044	.026	.013 - .043	.028	.004 - .062	.026
Other	.001 - .073	.020	.001 - .175	.070	.009 - .015	.012	.001 - .175	.036
Total selling and delivering[5]	1.018 - 1.557	1.370	.970 - 2.010	1.463	1.361 - 1.670	1.516	.970 - 2.010	1.430
Administrative and general:								
Salaries, commissions	.169 - .301	.257	.142 - .333	.212	.245 - .265	.255	.142 - .333	.240
Directors' fees, expenses	.000 - .017	.003	.000 - .009	.002	.000 - .000	.000	.000 - .017	.002
Manager's expense	.000 - .012	.006	.000 - .011	.003	.000 - .001	.001	.000 - .012	.004
Auditing, legal service	.010 - .056	.037	.031 - .054	.042	.014 - .017	.015	.010 - .056	.035
Depreciation of office equipment	.005 - .017	.008	.003 - .010	.006	.010 - .011	.010	.003 - .017	.008
Insurance, bonds	.010 - .016	.012	.005 - .030	.016	.016 - .019	.018	.005 - .030	.014
Office supplies, printing	.010 - .056	024	.029 - .038	.035	.020 - .042	.031	.010 - .056	.030
Telephone, telegraph, postage	.011 - .030	.023	.015 - .031	.022	.015 - .017	.016	.011 - .031	.021
Taxes	.011 - .019	.014	.010 - .013	.012	.005 - .017	.011	.005 - .019	.013
Other	.010 - .163	.062	.019 - .059	.031	.011 - .116	.064	.010 - .163	.051
Total administrative and general[5]	.285 - .582	.446	.321 - .530	.381	.399 - .442	.421	.285 - .582	.418

[1] Volume figures based on total pounds of milk equivalent marketed during the year.
[2] Includes five associations, one of which leases land and building used.
[3] Includes four associations.
[4] Includes two associations; comparable data not available for other two associations in study group.
[5] Figures in "Range" columns are not the sums of the lowest and highest amounts given immediately above. One is the sum for the individual association which had the lowest total, and the other is the sum for the association which had the highest total.

Source: Based on records of the individual cooperatives.

The large associations not only have more special programs -- such as in advertising -- but also sometimes have other costs that are either insignificant or nonexistent for small associations. For example, large associations may have broad quality programs supported by well equipped laboratories, public relations or membership education projects, or special services for members -- such as handling farm supplies or providing group hospitalization plans. These add to current expense but may be more than repaid by additional revenue. As indicated by previous data, each large association made substantial savings in 1952.

With respect to labor cost in processing, several factors, other than efficiency in use of labor, may result in low costs per unit of volume.

1. The association may buy finished products and resell them. For example, part of its milk (such as that put into paper containers) may be custom packaged elsewhere. It may also buy its ice cream mix or finished ice cream from another plant.

2. Surplus skim milk may be dumped or sold in bulk for processing in another plant.

3. The operation may be much less complex, with a smaller line of products.

4. Wage rates may be lower.

All of these factors had some bearing on the cost picture for the group of Georgia cooperatives.

A number of other analyses were made to shed light on the relationships of kind of operation to costs. These may be summarized as follows:

1. By far the most significant factor affecting processing costs was volume. As volume increased, in most cases costs per unit dropped.

2. None of the cooperatives put more than 50 percent of its packaged milk into paper but for those putting between 1/3 and 1/2 of their total volume into paper, bottle and carton costs averaged about 50 percent more than for those putting less than 1/3 of their volume into paper.

3. As the proportion of total volume used in bottled products increased, both the average sales figure and total expenses usually increased.

4. Most of the cooperatives made ice cream. Without more detailed cost information than is customarily assembled by the associations, it was impossible to tell precisely what effect manufacture and sale of ice cream had on operating margins. It is possible that the larger cooperatives had substantial savings from ice cream whereas some of the associations with small volumes may have incurred losses.

5. In most cases selling and delivering costs rose as wholesale percentage of total sales increased.

6. The labor cost for these businesses averaged only 40.8 percent of the total operating cost. This is a much lower proportion than is common in many northern areas, particularly in the very large cities. It is an important consideration in any comparison of these expenses with those of distributors in other markets.

The total distribution of the average operating expense dollar for these cooperatives is illustrated by figure 8. This figure indicates that labor expense was relatively high for large cooperatives. This indicates that they have been more successful in reducing other expense categories since their total expense is less than for smaller volume size groups.

USE OF MODEL PLANT AS "COST YARDSTICK"

In addition to comparing data for actual operations, it is useful to compare costs to a hypothetical or "model" plant. In constructing a model, certain conditions are assumed on the basis of cost data for several comparable groups during several periods of time. The use of a model is a refinement of the group cost comparison technique. Results obtained are more meaningful than an average for a group of associations, since any average necessarily reflects a combination of different practices and conditions.

During the course of this study, a hypothetical or model plant was developed as a cost yardstick for milk distributing cooperatives in Georgia and other South Atlantic states. This model is not a "perfect operation"; it is a reasonably efficient operation for a kind of business now existing in that area. Certain conditions were assumed:

1. The association was located in the Southeastern part of the United States and operated in a marketing environment common in that area.

2. The association owned its land and buildings.

3. The plant was modern and only 5 years old. Most of the equipment was that installed when the plant was constructed.

4. All producer-patrons were members. The average butterfat test of the milk received from them was 4.3 percent.

5. The volume of milk equivalent handled during the year averaged 10,000 pounds per day.

6. The annual average percentage of capacity at which the plant operated was slightly higher than the average for most Georgia cooperatives.

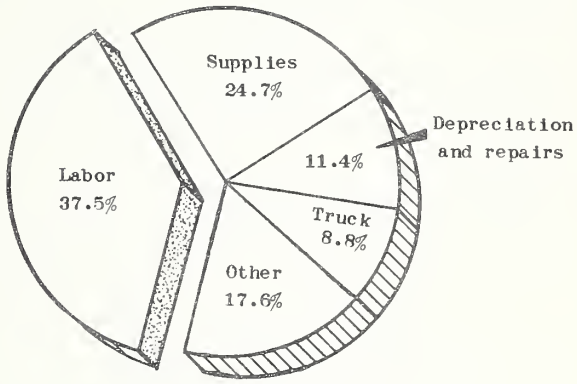
7. Processing operations may be summarized as follows: Products bottled - sweet milk (60 percent in glass, 40 percent in paper), light and heavy cream, chocolate drink, cultured buttermilk. Other products

FIGURE 8

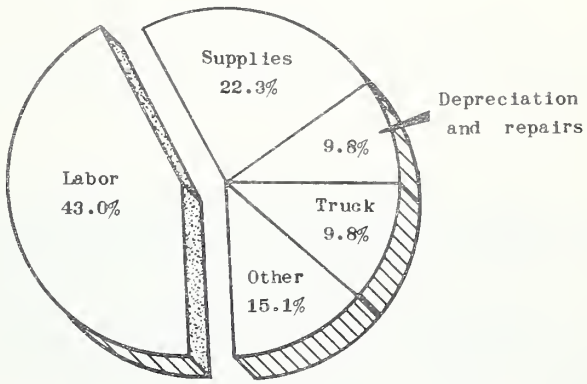
AVERAGE DISTRIBUTION OF EACH DOLLAR SPENT FOR OPERATING EXPENSES, 11 MILK DISTRIBUTING COOPERATIVES GROUPED ACCORDING TO ANNUAL VOLUMES, GEORGIA, 1952

VOLUME GROUP
(total pounds milk[1] in year)

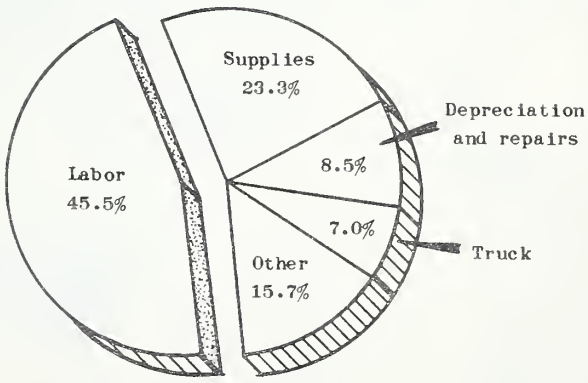
Small[2]
(less than 2½ million)



Medium[3]
(2½ to 5 million)



Large[4]
(over 5 million)



[1]Total milk equivalent basis.
[2]Includes 5 co-ops, one of which does not own land or buildings.
[3]Includes 4 co-ops.
[4]Includes 2 co-ops.

Source: Based on records of the individual cooperatives.

produced - ice cream, cottage cheese. Dairy products purchased - nonfat dry milk solids (for use in ice cream mix.)

8. The average butterfat test of standard bottled milk was 4 percent.

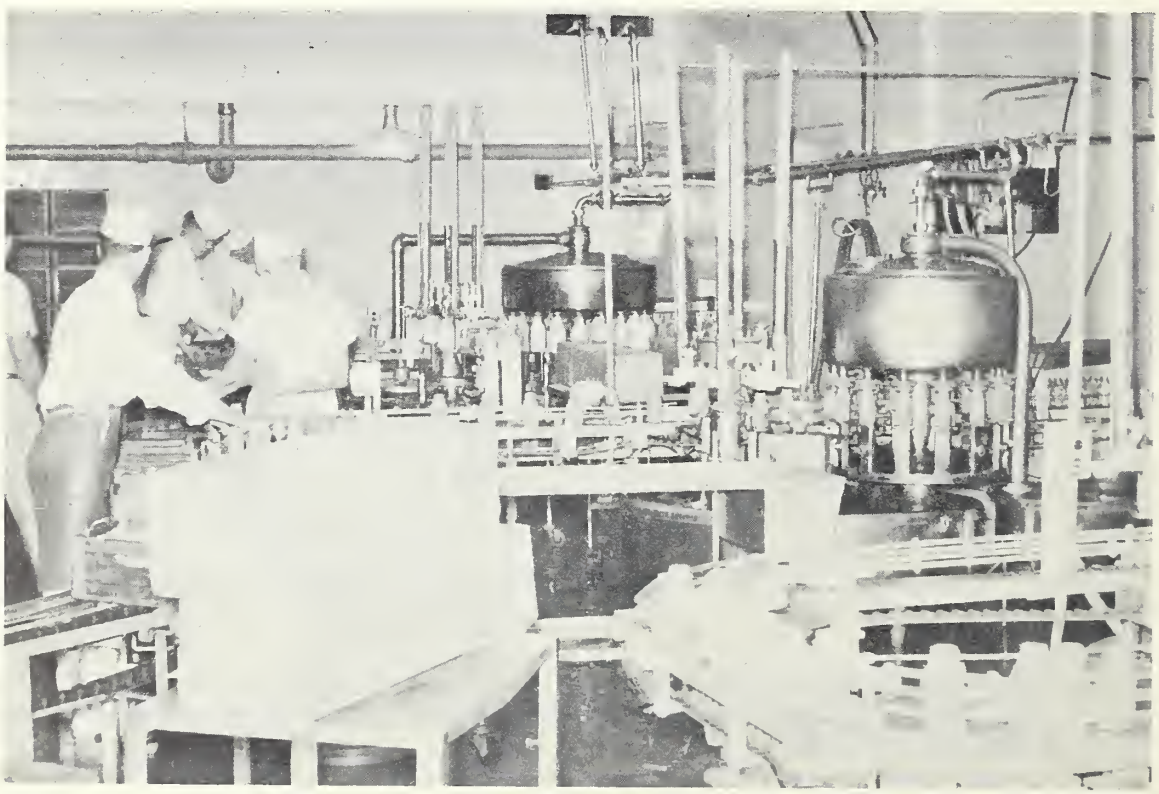
9. Of the association's total dollar sales, 50 percent was at wholesale and 50 percent at retail.

10. There was a small retail store with soda fountain in the plant but the association owned no outside dairy stores.

11. The association had 20 employees (full-time or equivalent of full-time) classified as follows:

Production	- 6 (including plant manager)
Route delivery	- 8 (not including "hop-boys")
Store	- 3
Clerical	- 2
Administration	- 1 (general manager)

These conditions should be kept in mind in making comparisons with cost data given later. For example, a larger association might have lower processing costs because of economies resulting from larger volume operations. An association of equal size would have lower processing costs



Bottling, capping, and casing quarts and half pints.

if it bottled only in paper or only in glass. Even if it had a dual operation, costs might vary. If 80 percent of its packaged milk were in paper, (as compared to 40 percent for the model) the container cost per unit likely would be higher than for the model.

A balance sheet for the model plant is presented in table 9. This represents reasonable goals for medium-sized milk distributing cooperatives in South Atlantic states. Figures 9 and 10 illustrate differences between the group of cooperatives in Georgia and the model plant.

A previous section of the report presented a series of ratios selected as "standards of successful operation." In table 10 these standards are compared with the relationships shown in table 9 for the model plant.

Table 11 presents a summary of the operating statement for the model plant. A graphic comparison of model plant data with actual averages for 12 Georgia cooperatives is given in figure 11.

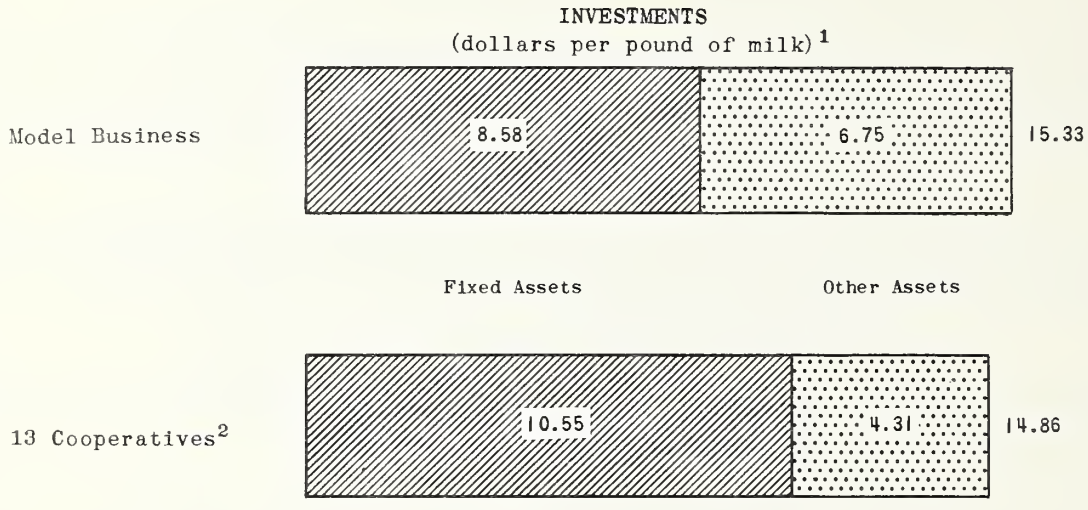
Table 9. - *Summary of the balance sheet, total and per pound of milk handled daily of a model milk distributing cooperative in Georgia marketing 10,000 pounds of milk daily*

Item	Amount		
	Total	Per pound of milk daily[1]	Percent of total
Assets:			
Current assets	$62,050	$6.20	40.5
Fixed assets (net)	85,775	8.58	55.9
Other assets	5,475	.55	3.6
Total	153,300	15.33	100.0
Liabilities and equities:			
Current liabilities	34,675	3.47	22.6
Long-term liabilities	18,250	1.83	11.9
Nonpatrons' equities	23,725	2.37	15.5
Members' equities[2]	76,650	7.66	50.0
Total	153,300	15.33	100.0

[1]Based on average number of pounds of milk equivalent handled daily during a 12-month period.
[2]"Members' equities" as used here is synonymous with "patrons' equities" for other cooperatives having nonmember producer-patrons.

Figure 9

ASSETS PER POUND OF MILK HANDLED DAILY, MODEL BUSINESS AND 13 ACTUAL MILK DISTRIBUTING COOPERATIVES, GEORGIA, DECEMBER 31, 1952

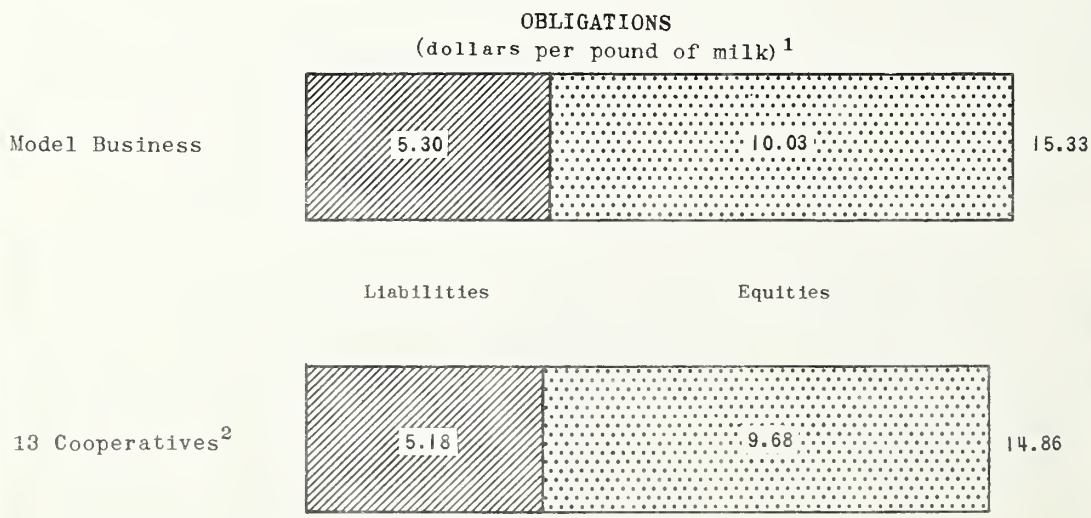


[1] Total milk equivalent basis
[2] Including 1 co-op which does not own land or buildings

Source: Based on records of the 13 and other cooperatives

Figure 10

LIABILITIES AND EQUITIES, PER POUND OF MILK HANDLED DAILY, MODEL BUSINESS AND 13 ACTUAL MILK DISTRIBUTING COOPERATIVES, GEORGIA, DECEMBER 31, 1952



[1] Total milk equivalent basis
[2] Including 1 co-op which does not own land or buildings

Source: Based on records of the 13 and other cooperatives

Table 10. - *Comparison of 10 financial ratios recommended as standards for judging performance of milk distributing cooperatives in Georgia with those for a model distributing cooperative handling 10,000 pounds of milk daily*

Balance sheet items compared	Ratios	
	Standard of successful operation	Model distributing cooperative
1. Current assets to current liabilities	1.80 to 1	1.79 to 1
2. Net fixed assets to total assets	[1].55 to 1	[1].56 to 1
3. Members' equities[2] to net fixed assets	.90 to 1	.89 to 1
4. Total equities[3] to net fixed assets	1.00 to 1	1.17 to 1
5. Members' equities[2] to total assets	.50 to 1	.50 to 1
6. Total equities[3] to total liabilities[4]	2.00 to 1	1.90 to 1
7. Net fixed assets to long-term liabilities	4.50 to 1	4.70 to 1
8. Total assets to total liabilities[4]	3.00 to 1	2.90 to 1
9. Members' equities[2] to nonpatrons' equities	3.00 to 1	3.23 to 1
10. Working capital[5] to long-term liabilities	1.50 to 1	1.50 to 1

[1]For this ratio it is desirable to be below the standard; the latter is a maximum rather than a minimum.
[2]"Members' equities" as used here is synonymous with "patrons' equities" for other cooperatives having nonmember producer-patrons.
[3]Members' plus nonpatrons'.
[4]Current plus long-term.
[5]Current assets minus current liabilities.

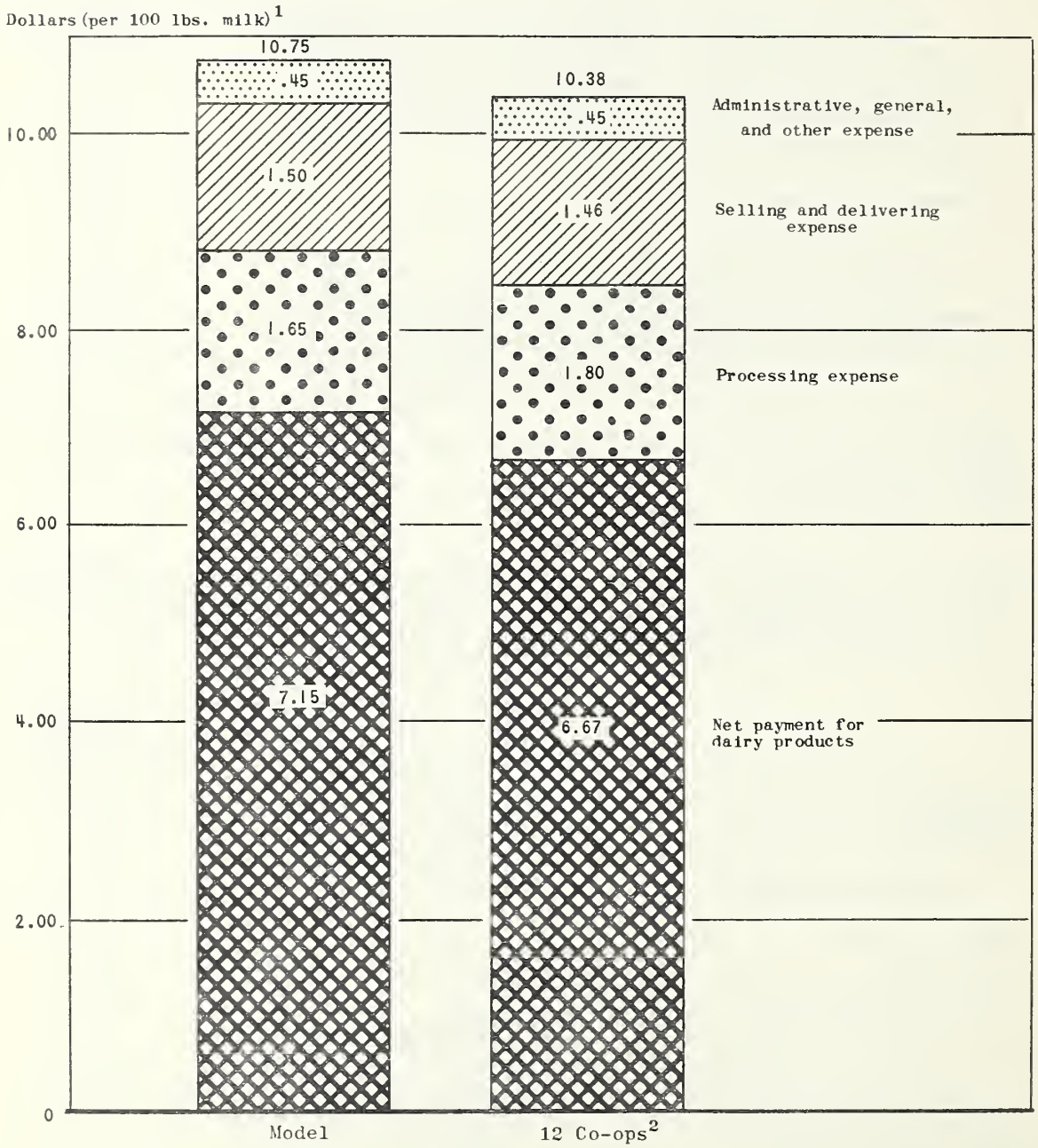
Table 11. - *Summary of the operating statement, total and per 100 pounds of milk handled daily, of a model milk distributing cooperative in Georgia marketing 10,000 pounds of milk daily*

Item	Amount		
	Total	Per 100 pounds of milk[1]	Percent of each sales dollar
Net sales	$392,375	$10.75	100.0
Paid for dairy products	242,725	6.65	61.9
Available for operations	149,650	4.10	38.1
Operating expenses:			
Processing	60,225	1.65	15.3
Selling and delivering	54,750	1.50	14.0
Administrative and general	14,600	.40	3.7
Total	129,575	3.55	33.0
Gross operating margin	20,075	.55	5.1
Add: Other receipts	1,460	.04	.4
Deduct: Other expenses	3,285	.09	.8
Net operating margin	18,250	.50	4.7

[1]Volume figure based on total pounds of milk equivalent marketed during a 12-month period.

Figure 11

PRINCIPAL OPERATING STATEMENT ITEMS, PER 100 POUNDS OF MILK HANDLED, MODEL BUSINESS AND 12 ACTUAL MILK DISTRIBUTING COOPERATIVES, GEORGIA, 1952



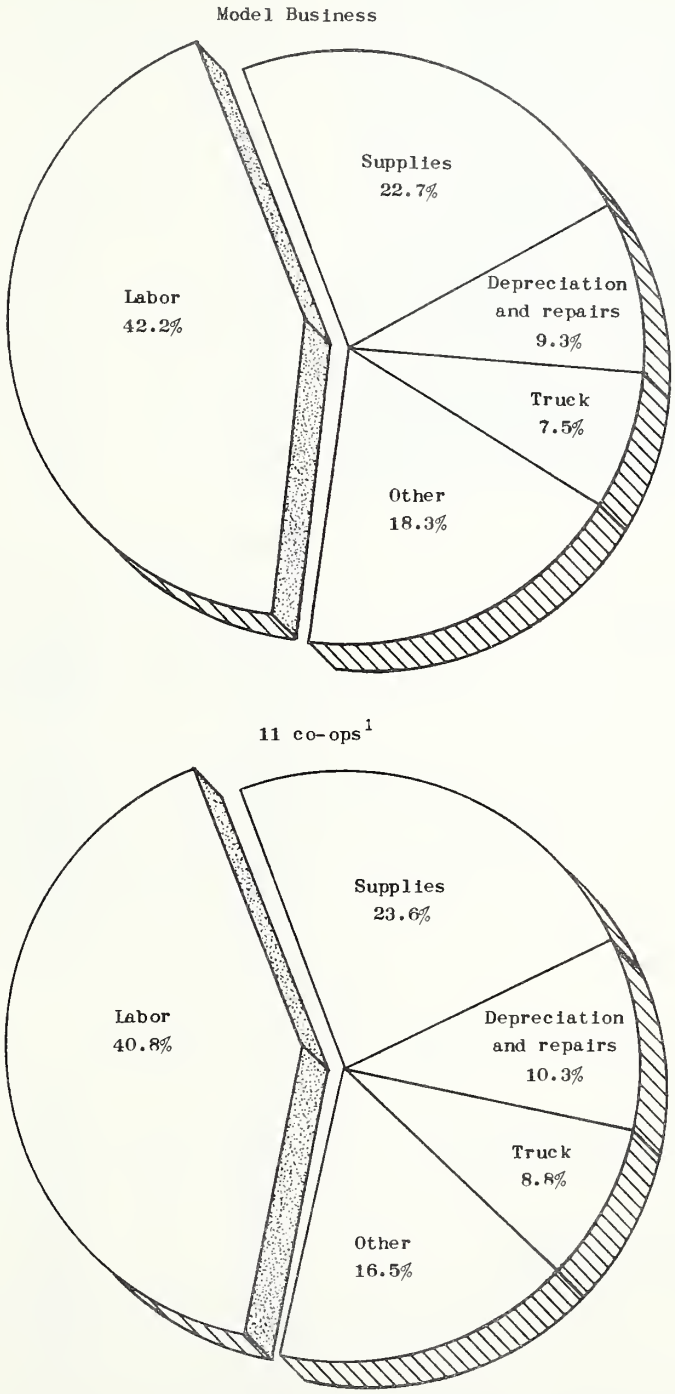
[1]Total milk equivalent basis

[2]Including 1 co-op which does not own land or buildings

Source: Based on records of the 12 and other cooperatives

FIGURE 12

AVERAGE DISTRIBUTION OF EACH DOLLAR SPENT FOR OPERATING EXPENSES, MODEL BUSINESS AND 11 ACTUAL MILK DISTRIBUTING COOPERATIVES, GEORGIA, 1952



[1]Including 1 co-op which does not own land and buildings.

Source: Based on records of the 11 and other cooperatives.

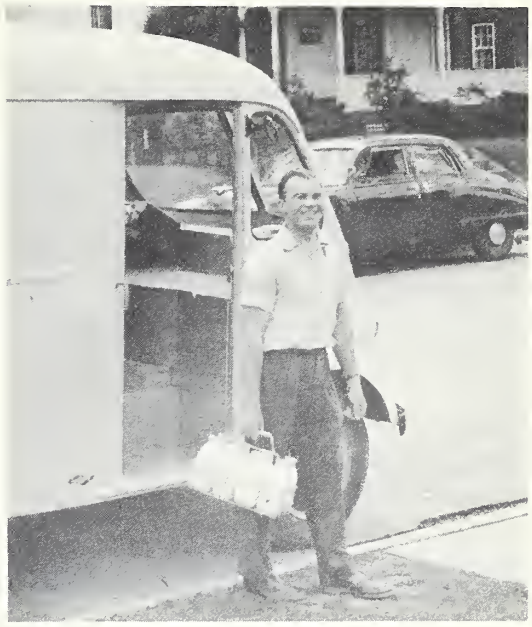
Table 12. - *Operating expense detail, total and per 100 pounds of milk handled daily, of a model milk distributing cooperative in Georgia marketing 10,000 pounds of milk daily*

Item of expense	Amount		
	Total	Per 100 lbs. of milk[1]	Percent of total operating expense
Processing			
Labor	$16,608	$0.455	12.8
Supplies	16,790	.460	13.0
Bottles, cartons	9,125	.250	7.0
Depreciation of building, equipment	5,110	.140	3.9
Repairs to building, equipment	2,920	.080	2.3
Fuel, light, power	5,475	.150	4.3
Insurance	730	.020	.6
Laundry, cleaning supplies	1,460	.040	1.1
Taxes	1,095	.030	.8
Other	912	.025	.7
Total	60,225	1.650	46.5
Selling and delivering			
Salaries, commissions	29,200	.800	22.5
Truck, garage	9,673	.265	7.5
Retail store	5,475	.150	4.2
Depreciation of equipment	3,650	.100	2.8
Advertising	2,190	.060	1.7
Insurance	912	.025	.7
Taxes	1,643	.045	1.3
Supplies	912	.025	.7
Other	1,095	.030	.8
Total	54,750	1.500	42.2
Administrative and general			
Salaries, commissions	8,943	.245	6.9
Managers' expense	182	.005	.2
Auditing, legal service	913	.025	.7
Depreciation of office equipment	365	.010	.3
Insurance, bonds	547	.015	.4
Office supplies, printing	1,095	.030	.8
Telephone, telegraph, postage	730	.020	.6
Taxes	365	.010	.3
Other	1,460	.040	1.1
Total	14,600	.400	11.3

[1]Volume figure based on total pounds of milk equivalent marketed during a 12-month period.

The ratio of net sales to net fixed assets is 4.5 to 1 for the model plant. This is lower than sometimes recommended but appears reasonably high for an association of this size in the southeastern region.

With advance payments of 61.9 percent, and a net operating margin of 4.7 percent, (Table 11), producer-patrons of the model plant would receive two-thirds of every sales dollar. As shown in figure 12, however, labor would receive a higher proportion of each expense dollar than the actual average paid out by the Georgia cooperatives.



Like other co-ops, associations in Georgia deliver milk direct to homes.

Operating expense details are given in table 12. In general, the model plant operation represents a higher level of efficiency than that attained by most of the Georgia associations. For each item of expense, however, one or more Georgia cooperatives had a lower figure.

Data in these tables and figures have value for managements of many milk distributing cooperatives. The model operation is a more specific kind of cost "yardstick" than they have had before and can help indicate the problem areas in which costs should be reduced. Further study can show how these costs may be reduced.

APPENDIX

CALCULATING MILK EQUIVALENT

This section explains a method of calculating milk equivalent volumes. Especially suited for conditions in southern states, it may also be adapted to conditions in any part of the nation.

In the south, a milk distributing organization typically meets its needs for additional butterfat (over and above that currently received from regular local producer-patrons) by purchasing quantities of 40 percent cream on the open market. Similarly, it obtains additional supplies of the other milk solids by purchasing nonfat dry milk solids. Associations producing ice cream mix usually need to buy milk-solids-not-fat during at least part of each year. It should be noted, however, that cooperatives in Georgia not making ice cream mix do not purchase nonfat dry milk solids.

Several of the associations in this study made emergency purchases of fluid milk in order to meet consumer demand during brief periods of low production.

The first step in the milk equivalent method is to determine the kinds, quantities, and prices paid for dairy products received from members or purchased from other sources. In this particular study there was a rather large number of associations. Furthermore, there were differences in the annual average butterfat test of milk received from local producer-patrons, and certain cooperatives purchased manufactured dairy products whereas others did not.

To meet this situation, published dairy product price quotations for sales on the Atlanta market were used instead of actual prices paid by the individual associations. Averages were made of the quotations given during selected weeks in which associations buying manufactured dairy products made their largest purchases. Comparison with actual prices paid by 6 associations indicated that the following averages were reasonably representative of prices paid by the cooperatives during the year:

$31.30 per 10-gallon can of 40% cream (less-than-carlot)
19.75¢ per pound of nonfat dry milk solids (spray process, less-than-carlot, 10 to 49 pound bags)

The latter price -- 19.75 cents per pound -- was assumed to be the value of each pound of milk-solids-not-fat received from supplementary sources.

The next step was to determine a reasonable estimate of the value of the butterfat.

1. It was assumed that the average can of cream would weigh 83.7 pounds.

2. Since this was 40 percent cream, there were 33.48 pounds of butterfat in each can. (83.7 multiplied by .40).

3. The price per pound of butterfat then was 93.5 cents ($31.30 divided by 33.48), based on an assumption for purposes of this comparison that the small amount of nonfat milk solids in the cream had no value.

The next step was to estimate the value to each association of the various milk products purchased to supplement local fluid receipts. Nearly all the associations interviewed reported that the average test of their regular bottled milk (the largest selling item) was 4 percent butterfat. The others reported slightly higher average tests.

It was considered reasonable, therefore, to consider 4 percent as the base test for milk needed to support each association's business.

The composition of 100 pounds of 4 percent milk is about as follows, according to Froker and Hardin (Froker, R. K., and Hardin, C. M., Paying

Producers for Fat and Solids-not-Fat in Milk. 48 pp. Wis. Agr. Expt. Sta. Res. Bul. 143, Madison, 1942. See p. 4.):

4.00 pounds of butterfat
8.67 pounds of milk-solids-not-fat
87.33 pounds of water

100.00 pounds of milk

The "milk equivalent factor" is a single figure representing the total milk solids value of 4 percent milk and is used as a measuring stick to indicate the approximate values of other products. It is determined as follows:

1. Pounds of fat (4.0) in 4 percent milk times the average value of butterfat from supplemental sources.

2. Pounds of solids-not-fat (8.67) in 4 percent milk times the average value of milk-solids-not-fat from supplemental sources.

3. The products of steps 1 and 2 are added and the sum is the milk equivalent factor.

In this instance, the milk equivalent volume factor was determined as follows:

1. 4.0 x .935 = 3.74
2. 8.67 x .1975 = 1.71

3. Total 5.45

In any particular area, the milk equivalent factor determined in this manner is not likely to vary much during a period of several years.

The milk equivalent value of 40 percent cream was then determined. The average composition of 100 pounds of cream is as follows:

40 pounds butterfat
6 pounds solids-not-fat
54 pounds other

100 pounds

Using our previously determined values for supplemental fat and solids-not-fat, we had the following:

40 x .935 = 37.40
6 x .1975 = 1.19

38.59

38.59 divided by 5.45 (the milk equivalent factor) = 7.08.

Thus each pound of 40 percent cream was assumed to be equal in value to 7.08 pounds of 4.0 percent milk. (If only fat content were considered in these calculations, the figure would be 10.0 since there is 10 times as much butterfat in 1 pound of 40 percent cream as in 1 pound of 4 percent milk. However, such a value relationship would be unrealistic.)

Using this same procedure, the milk equivalent values of various other dairy products were determined. A few illustrations may suffice to show the general pattern:

Product	Milk equivalent value
Nonfat dry milk	3.52
Fluid skim milk	.33
Sweetened condensed skim	1.52
Ice cream mix (10%)	2.11
4.35 percent fluid whole milk	1.07

These values then were applied to the actual quantities of products received by each cooperative. The year 1952 was characterized nationally by unusually large surpluses during the late fall and winter months. This general pattern was reflected in Georgia in reduced volumes of dairy products purchased from sources other than local producers. Nevertheless, the computed volumes of milk equivalent on a 4 percent basis ranged from 4 to 38 percent more than the actual volumes of average test milk received from local producers. This situation clearly indicates the need for a method of adjustment such as the one used in this study.

It should be noted, however, that only the extreme variations between average tests of local milk and the final milk equivalent figures seriously need adjustments. For most of the 13 plants, the 4 percent milk equivalent figures fell within a relatively narrow range of 106 percent to 111 percent of the average test quantities. This was due, in part, to unusually small purchases of non-local milk products as a result of high local production. Nevertheless, for most of the plants the adjustments for milk equivalent made in the course of this study were not of major importance insofar as comparisons made between these plants are considered.

For several plants, however, the volume adjustments were very important for the comparisons given in this report, as well as for comparisons with plants in other states.

The limited variation for most cooperatives was due primarily to the fact that for each association the average butterfat test of members' milk exceeded 4.0 percent. To illustrate, converting 4.35 milk to 4.0 resulted in a milk equivalent figure that was 7 percent greater than the quantity of 4.35 milk.

This method of estimating milk equivalent volume is practical and useful. However, it could be improved by the addition of a handling cost factor.

Such a method would involve weighting the volumes of individual product units by their costs of processing and delivery. For example, regular milk in a standard single-quart glass container might be given a value of 1.00. Let us assume that the cost of putting milk in one-half pint glass containers was 70 percent of the cost of bottling milk in single-quart glass containers. The milk equivalent cost factor for the one-half pint container then would be .70 for the plants studied.

If a plant produced an average of 1,000 single-quarts and 2,000 half-pints, the processing cost factor would be applied as follows:

Kind of unit	Number of units	Cost factor	Milk equivalent
Single-quart	1,000	1.00	1,000
Half-pint	2,000	.70	1,400

Similarly, the cost factors for selling and delivering the half-pint might be .70 for wholesale and .80 for retail sales.

By thus adjusting the actual volume of milk equivalent to costs as affected by individual plant utilization patterns, more precise cost comparisons would be possible.